

6840P

Date: January 12, 2001

Diana Hwang  
U.S. Fish and Wildlife Service  
2600 SE 98<sup>th</sup> Ave. Suite 100  
Portland, OR 97266

Dear Diana,

Per regulations on interagency cooperation (50 CFR 402) pursuant to Section 7 of the Endangered Species Act (ESA) of 1973 (as amended), this letter and the enclosed Biological Assessment (BA) constitute a request to the U.S. Fish and Wildlife Service for informal consultation and a request to the National Marine Fisheries Service for formal and informal consultation initiation. The enclosed BA documents proposed actions included in the John Day River Management Plan (Plan), which are located within the Central Oregon Resource Area, Prineville District Bureau of Land Management and which 'may affect' Mid Columbia summer steelhead ESU, which was listed as threatened under the ESA (March 16, 1999) or which 'may affect' bull trout, which was listed as threatened under the ESA (June 10, 1998), and also includes steelhead critical habitat as designated by the NMFS as of March 16, 2000. An Essential Fish Habitat Assessment with regard to chinook salmon in the basin is also included as part of this document.

The BA addresses 18 actions within 12 programs. Of these: no determination was made on 6 actions, consultation on these actions will either be done when specific actions are proposed or will defer to consultations addressing these programs outside of this effort. Seven of these actions are 'may effect, not likely to adversely affect' with regard to listed steelhead and critical habitat, three of which are also 'may effect, not likely to adversely affect' with regard to bull trout. One action is 'may effect, likely to adversely affect' with regard to steelhead and critical habitat. This action has also been previously addressed in consultation with NMFS and a BO has been received by the BLM; however, since this action is also described in the Plan it was readdressed for consultation in this process also.

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Sincerely,

Christina Welch  
Field Manager  
Central Oregon Resource Area  
Prineville District  
Bureau of Land Management

6840P

Date: January 12, 2001

Alan Mauer  
U.S. Fish and Wildlife Service  
Bend Field Office  
20310 Empire Ave. Suite A100  
Bend, OR 97701

Dear Mr. Mauer,

Per regulations on interagency cooperation (50 CFR 402) pursuant to Section 7 of the Endangered Species Act (ESA) of 1973 (as amended), this letter and the enclosed Biological Assessment (BA) constitute a request to the U.S. Fish and Wildlife Service for informal consultation and a request to the National Marine Fisheries Service for formal and informal consultation initiation. The enclosed BA documents proposed actions included in the John Day River Management Plan (Plan), which are located within the Central Oregon Resource Area, Prineville District Bureau of Land Management and which 'may affect' Mid Columbia summer steelhead ESU, which was listed as threatened under the ESA (March 16, 1999) or which 'may affect' bull trout, which was listed as threatened under the ESA (June 10, 1998), and also includes steelhead critical habitat as designated by the NMFS as of March 16, 2000. An Essential Fish Habitat Assessment with regard to chinook salmon in the basin is also included as part of this document.

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Sincerely,

Christina Welch  
Field Manager  
Central Oregon Resource Area  
Prineville District  
Bureau of Land Management

6840P

Date: January 12, 2001

Mike Crouse  
Attn: Rob Markle  
National Marine Fisheries Service  
Environmental and Technical Services Division  
525 NE Oregon St., Suite 500  
Portland, OR 97232-2737

Dear Mr. Crouse,

Per regulations on interagency cooperation (50 CFR 402) pursuant to Section 7 of the Endangered Species Act (ESA) of 1973 (as amended), this letter and the enclosed Biological Assessment (BA) constitute a request to the National Marine Fisheries Service for formal and informal consultation initiation and a request to the U.S. Fish and Wildlife Service for informal consultation. The enclosed BA documents proposed actions included in the John Day River Management Plan (Plan), which are located within the Central Oregon Resource Area, Prineville District Bureau of Land Management and which 'may affect' Mid Columbia summer steelhead ESU, which was listed as threatened under the ESA (March 16, 1999) or which 'may affect' bull trout, which was listed as threatened under the ESA (June 10, 1998), and also includes steelhead critical habitat as designated by the NMFS as of March 16, 2000. An Essential Fish Habitat Assessment with regard to chinook salmon in the basin is also included as part of this document.

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Sincerely,

Christina Welch  
Field Manager  
Central Oregon Resource Area  
Prineville District  
Bureau of Land Management

6840P

Date: January 12, 2001

Theodore Meyers  
Attn: Scott Leonard  
National Marine Fisheries Service  
10215 W. Emerald St. Suite 180  
Boise, ID 83704

Dear Mr. Meyers,

Per regulations on interagency cooperation (50 CFR 402) pursuant to Section 7 of the Endangered Species Act (ESA) of 1973 (as amended), this letter and the enclosed Biological Assessment (BA) constitute a request to the National Marine Fisheries Service for formal and informal consultation initiation and a request to the U.S. Fish and Wildlife Service for informal consultation. The enclosed BA documents proposed actions included in the John Day River Management Plan (Plan), which are located within the Central Oregon Resource Area, Prineville District Bureau of Land Management and which 'may affect' Mid Columbia summer steelhead ESU, which was listed as threatened under the ESA (March 16, 1999) or which 'may affect' bull trout, which was listed as threatened under the ESA (June 10, 1998), and also includes steelhead critical habitat as designated by the NMFS as of March 16, 2000. An Essential Fish Habitat Assessment with regard to chinook salmon in the basin is also included as part of this document.

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Christina Welch  
Field Manager  
Central Oregon Resource Area  
Prineville District  
Bureau of Land Management

## **John Day River Management Plan**

### **Consultation with NMFS (steelhead) and USFWS (bull trout)**

The Biological Assessment (BA) has been completed. This BA addresses baseline conditions, proposed actions and effects determinations for MCR steelhead and bull trout within the planning boundaries. This document was mailed on January 12, 2001 in its complete form. At this point the document has not been 'accepted' as a final BA by either NMFS or USFWS. Once it has been accepted then completion of Concurrence Letters and Biological Opinions (BO) are contingent upon NMFS and USFWS.

There is only one action which requires a BO from NMFS - road maintenance on the S.F. John Day Access Road. This action has previously been consulted on and a BO has been received, but since the action is described in the plan it should be addressed again. A BO takes longer for the regulatory agencies to prepare than does a Concurrence Letter, therefore if discussions at the Level 2 should agree to defer this determination to previous consultation already completed then a BO would not be required.

The remaining actions require a Letter of Concurrence from NMFS and USFWS. As long as they find the BA sufficient for their needs it may be possible for them to issue a Concurrence Letter prior to the ROD release of February 28, 2001.

This scenario is optimistic, my experience with the regulatory agencies is that a BA submitted is never accepted quickly. Although the BLM and NMFS have worked closely over the last two months to prepare the BA in a sufficient manner this is no guarantee that the document will be accepted in a timely manner to receive a Concurrence Letter by the court ordered deadline. In order to satisfy all the questions and concerns that the regulatory agencies have not previously voiced information swapping can, based on past experience, take months.

In addition, grazing, a program which is currently undergoing consultation through both agencies has not yet been completed. In discussion with the regulatory agencies it was decided that rather than reinstitute consultation on this program again in this effort, the regulatory agencies would focus on completing the previous consultation on grazing (submitted to NMFS June 2000, submitted to USFWS October 1999 and again in November 2000).

In order to have the most likely probability of completing consultation with regard to the plan by February 28, 2001, three things need to happen:

1. Grazing BO's need to be completed and completely through legal review
2. The need for a BO on submitted BA is eliminated - consultation on road maintenance for S.F. John Day Access Road is deferred to already completed BO.
3. Acceptance of the BA as submitted, after previous two months of coordination with BLM and NMFS.

After speaking with NMFS item two seems improbable since their direction was to issue a BO on the submitted BA, including both NLAA and LAA calls. This seems in difference to how NLAA and LAA actions have been dealt with in past consultations - a Concurrence Letter is



issued with regard to NLAA calls and then a BO is prepared for all LAA calls. This approach also seems to fly against recent court determinations on the west side of Oregon where NLAA and LAA actions were combined into a BO and subsequent court injunctions halted implementation of all actions. The court later made the distinction between NLAA and LAA actions and approved for implementation all NLAA actions.

The following is the text of a cover letter sent to USFWS and NMFS with the BA enclosed: *Per regulations on interagency cooperation (50 CFR 402) pursuant to Section 7 of the Endangered Species Act (ESA) of 1973 (as amended), this letter and the enclosed Biological Assessment (BA) constitute a request to the National Marine Fisheries Service for formal and informal consultation initiation. The enclosed BA documents proposed actions included in the John Day River Management Plan, which are located within the Central Oregon Resource Area, Prineville District Bureau of Land Management and which 'may affect' Mid Columbia summer steelhead ESU, which was listed as threatened under the ESA (March 16, 1999) or which 'may affect' bull trout, which was listed as threatened under the ESA (June 10, 1998), and also includes steelhead critical habitat as designated by the NMFS as of March 16, 2000. An Essential Fish Habitat Assessment with regard to chinook salmon in the basin is also included as part of this document.*

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# Executive Summary of Calls and Coverage

Program	NMFS USFWS	
Riparian and Aquatic Habitat Restoration	NLAA	NLAA
Fisheries	ND	ND
Water Quality and Water Quantity	NE	NE
Noxious Weed Control - <i>SO to complete consultation</i>	ND	ND
Fire Management		
Fire Suppression - <i>consultation needs done at some higher level</i>	ND	ND
Prescribed Fire	NLAA	NLAA
Fire Rehabilitation	NLAA	NLAA
Grazing - <i>consultation ongoing NMFS and USFWS</i>	ND	ND
Forestland Management	NE	NE
Agricultural Lands Management	NLAA	NE
Recreation Management		
Boating Use Levels	NE	NE
Motorized Boating	NLAA	NE
Dispersed Recreation	NE	NE
Developed Recreation	NLAA	NE
Public Access		
Road Maintenance - Segments 1-3	NLAA	NE
Road Maintenance - S.F. Access Rd. - <i>consulted BO previously received</i>	LAA	NE
Energy and Minerals Resources	ND	ND
Land Ownership, Classification and Use Authorizations	ND	ND

ND - No Determination - specific proposals in this program would reinitiate consultation.

NE - No effects to listed species or critical habitat from actions proposed and described in plan.

NLAA - Action may have some effects - positive or negative. BLM is requesting Concurrence Letter from regulatory agency.

LAA - Actions will likely have adverse effects on listed fish or critical habitat - BLM is requesting full scale consultation with a Biological Opinion prepared by the regulatory agency.

# **Biological Assessment for Steelhead Trout and its Habitat and Bull Trout in the John Day River Basin**

**Submitted to:  
National Marine Fisheries Service and  
U.S. Fish and Wildlife Service  
Portland Oregon**

**January 2001**



**Submitted by: Bureau of Land Management,  
Prineville District  
Central Oregon Resource Area**

For: John Day River Proposed Management Plan

# Biological Assessment for Steelhead Trout and its Habitat and Bull Trout in the John Day River Basin

Submitted to:  
National Marine Fisheries Service and  
U.S. Fish and Wildlife Service  
Portland Oregon

Prepared by:  
Brent Ralston, Fisheries Biologist  
Prineville District BLM  
Central Oregon Resource Area

## January 2001



For: John Day River Proposed Management Plan



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# Chapter 1 Introduction

## I. Scope

The John Day Basin encompasses about 5.1 million acres of an extensive interior plateau between the Cascade Range and the Blue Mountains in north east-central Oregon. Most of the basin is privately owned (3.2 million acres). National Forest lands encompass about 1.53 million acres, and about 332,300 acres (about 7 percent) are managed by the Bureau of Land Management (BLM). Oregon Department of Fish and Wildlife (ODFW), National Park Service, Oregon State Land Board, Oregon Forestry Department, and the Corps of Engineers manage about 57,000 acres. (See Appendix A - Map 1 for a map of the BLM Lands). Predominate management activities in this watershed are agriculture, grazing, timber, and recreation.

Within the John Day Basin are four 4<sup>th</sup> field Hydrologic Units (HU) or subbasins:

- Lower John Day #17070204
- Upper John Day #17070201
- North Fork John Day #17070202
- Middle Fork John Day #17070203

Table 1 shows total acres, and Prineville District BLM managed lands within each 4<sup>th</sup> field Hydrologic Unit.

Table 1. **Subbasins in the John Day Basin.**

Subbasin Name	Total Acres	Prineville District BLM Managed Acres
Lower John Day	2,011,000	242,618
Upper John Day	1,375,000	145,630
North Fork John Day	1,187,000	35,350
Middle Fork John Day	504,500	3,975

Due to the unique history of public lands and the origination of the BLM as a land management agency, public land ownership patterns in the John Day Basin are often scattered and irregularly shaped. During the 19<sup>th</sup> Century the United States Government, through the General Lands Office (GLO) initiated and encouraged land disposals or give-a-ways to raise funds to support government functions and encourage settlement of the west. Programs such as the Homestead Act of 1862, Railroad Land Grants beginning in 1850, the Timber Culture Law of 1873, the Desert Land Law of 1877, the Timber and Stone Law of 1878, The Carey Land Act of 1894, the Reclamation Law of 1902, and the Stockraising Homestead Law of 1916, all led toward the fragmentation of public lands. Early settlers claimed the most favorable parcels - those adjacent to water and suitable for cultivation and/or other agricultural development. As demand grew, more marginal lands became settled. Many of the land disposal laws required settlers to ‘improve’ the land in some way (i.e., produce a crop, remove timber, or irrigate lands). Due to natural conditions of the ecosystem where these lands were located and variations in weather (i.e. drought) many of these lands were not ‘improved’ according to the stipulation of the law and ownership reverted back to the GLO. This subsequent disposal and reacquisition of scattered lands further fragmented the public lands. This land pattern carried through as the GLO became

the BLM. This land pattern creates challenges in managing sensitive resources when public lands are surrounded by large expanses of private lands. Management of more scattered, often less desirable, less productive tracts, is constrained by resource concerns and access issues. Somewhat blocked and consolidated public lands lead to more opportunities and flexibility in management. The Prineville District has for many years carried out programs aimed at consolidating public lands. In the John Day Basin these consolidated areas are located along the lower John Day River corridor below Clarno (RM109-129), the Sutton Mountain area near Mitchell, Oregon, uplands west of Rudio Mountain, (RM185-207), and the South Fork of the John Day watershed (RM9-36) between the Ochoco and Malheur National Forests. In addition a project known as the North east Oregon Assembled Land Exchange is in process and seeks to consolidate public lands along the North Fork of the John Day River and in the Rudio Mountain Area.

The John Day River Proposed Management Plan(Plan) addresses management of public lands (BLM managed lands) within the mainstem river corridor (1/4 mile each side of the river in mainstem, South, North and Middle Forks). This Biological Assessment addresses impacts on listed species and critical habitat for actions proposed in that management plan, and also includes an assessment of impacts to essential fish habitat for species included in the Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U.S.C. 1801 et seq.).

Programs addressed in the Plan include:

1. Riparian and Aquatic Habitat Restoration
2. Fisheries
3. Water Quality and Water Quantity
4. Noxious Weed Control
5. Fire Management
6. Grazing
7. Forestland Management
8. Agricultural Lands Management
9. Recreation Management
10. Public Access
11. Energy and Minerals Resources
12. Land Ownership, Classification and Use Authorizations.

The expected life of this Plan is similar to other planning documents of its scope - approximately 10-15 years.

## II. Background

The National Wild and Scenic Rivers System was created by Congress in 1968 with the passage of the Wild and Scenic Rivers Act (PL 90-542). Its purpose, to preserve certain rivers with outstanding natural, cultural or recreational features in a free-flowing condition for the enjoyment of present and future generations. The Omnibus Oregon Wild and Scenic Rivers Act of 1988 (Public Law 100-558) designated several segments of Oregon rivers as Wild and Scenic, including three stretches of the John Day River.

The purpose of this management plan is to implement the direction of the Omnibus Oregon Wild and Scenic Rivers Act of 1988 (Act) for the John Day River. This Act requires the BLM, in partnership with the State of Oregon and affected Native American Tribes, to develop a management plan that will protect and enhance the identified outstandingly remarkable and significant values for federal lands within the designated Wild and Scenic stretches of the John Day River.

The Management Plan addressed the river corridor in segments:

- Segment 1 - Mainstem from Tumwater Falls (RM 10) to Cottonwood Bridge (RM 40)
- Segment 2 - Mainstem from Cottonwood Bridge to Clarno (RM 109)
- Segment 3 - Mainstem from Clarno to Service Creek (RM 157)
- Segment 4 - Mainstem Service Creek to Dayville (RM 213)
- Segment 5 - Mainstem Dayville to Headwaters (RM 284)
- Segment 6 - North Fork from Kimberly (RM 0) to Monument (RM 16)
- Segment 7 - North Fork from Monument to Camas Creek (RM 57)
- Segment 8 - North Fork from Camas Creek to Headwaters
- Segment 9 - Middle Fork of John Day River
- Segment 10 - South Fork from Mainstem Confluence (RM 0) to County Road 63 (RM 35)
- Segment 11 - South Fork from County Road 63 to Headwaters (RM 59)

These segment distinctions have been incorporated into this Biological Assessment. Segments 1-3, 8 & 10 are federally designated as Recreational under the Wild and Scenic Rivers Act. The recreational designation refers to the level of access and development, this designation refers to rivers or sections of rivers that are readily accessible by road or railroad that may have some development along their shorelines and that may have undergone some impoundment or diversion in the past.

With passage of the Act the Prineville BLM began work on the Proposed Management Plan. A draft was released in 1992. At that time the draft was found to be inadequate with respect to several management issues (i.e. grazing). At that time the planning process for the John Day River Management Plan was tabled until management actions such as grazing could be completely reviewed and adjusted to promote recovery of habitat for anadromous fish species within the basin in concert with other management directives at that time.

Following the listing of two anadromous Columbia River fish species (Snake River sockeye salmon, 1991 and Snake River chinook salmon, 1992) under the Endangered Species Act, the

Northwest Power Planning Council (Council) amended the Columbia River Basin Fish and Wildlife Program (Program). A Comprehensive strategy for improving Columbia River salmon at every stage of their life cycle was needed. The revision of the Program was the result of over 20 meetings held by the Council with all affected interests. These meetings were sometimes referred to as "The Salmon Summit". The Program was amended and specific elements were published in 1992 as Volumes I and II, "Strategy for Salmon", by the Council. As a result, the BLM was asked and agreed to review all livestock management plans for public lands that provide habitat for Columbia River anadromous fish. Wherever necessary each plan would be amended, updated and changed to meet the Council's habitat objectives, enhance riparian objectives and comply with State water quality standards.

The following goals and objectives are the guidelines used in evaluation of grazing allotments. Because of the low percentage of public land in the JDR basin (7 percent), the ability to fulfill many of these goals will depend on private landowners affecting management changes on their lands. A comprehensive description of stated objectives may be found in their respective documents.

#### Land Use Goals and Objectives:

##### **Basin Wide Goals (described by Interdisciplinary Team):**

- 1) Meet State Water Quality Standards
- 2) Rehabilitate Watersheds for Native Flora and Fauna
- 3) Accommodate the Needs of Affected Interests

##### **Northwest Power Planing Council Strategy for Salmon Objectives:**

- 1) Limit the percentage of fine sediment (less than 6.4 millimeters in size) in steelhead and salmon redds to no more than 20% just prior to fry emergence relative to a control area.
- 2) Insure that there is no long term increase in sediment loading from management actions.
- 3) During spawning, water temperatures should range between 39 and 49 degrees Fahrenheit(°F).
- 4) During rearing, water temperatures should range between 45°F and 58°F.
- 5) Concentrations of dissolved oxygen shall not be less than 75% of saturation during the seasonal low level or less than 95% of saturation in spawning areas during spawning and fry development.

- 6) Allow no more than a 10% cumulative increase in natural stream turbidity as measured relative to a control point upstream.
- 7) pH of the water shall range between 6.5 and 8.5.
- 8) Concentrations of total dissolved solids shall not exceed 500 milligrams per liter relative to a control point upstream.
- 9) Limit fecal coliform to no more than 200 coliform per 100 millimeters of sample relative to a control point upstream.
- 10) Retain existing shade and increase shade of riparian vegetation, re-vegetate riparian areas.

#### **State Water Quality Standards:**

- 1) Dissolved Oxygen - concentrations shall not be less than 75% of saturation during the seasonal low level or less than 95% of saturation in spawning areas during spawning and fry development.
- 2) Temperature - the maximum seven-day running maximum temperature shall not exceed 64°F.
- 3) Turbidity - no more than a 10% cumulative increase in relative to a control point upstream.
- 4) pH - range between 6.5 and 8.5.

#### **Two Rivers Resource Management Plan (1986) Goals and Objectives:**

- 1) Maintain current livestock grazing levels and meet riparian and upland vegetation and management objectives.
- 2) Manage riparian areas along the John Day River and its major tributaries to full potential, with a minimum of 60% of the vegetative potential to be achieved within 20 years.
- 3) Provide forage to meet management objective numbers of ODFW for deer and elk. Manage upland vegetation to achieve maximum wildlife habitat diversity. Manage all streams with fisheries or fisheries potential to achieve a good to excellent aquatic habitat condition.
- 4) Designate areas with identified outstanding natural or cultural values as areas of critical environmental concern. Maintain or improve other unique wildlife ecological values.

**John Day Resource Management Plan Record of Decision (1985)**  
**Goals and Objectives:**

- 1) Improve and maintain vegetative condition to benefit livestock and wildlife. Coordinate livestock use in riparian zones in order to protect water quality and enhance anadromous and other sport fisheries.
- 2) Enhance water quality and manage aquatic habitat with particular attention to those watersheds with major downstream uses including native anadromous species, other sports fisheries, and agriculture.

Habitat Management Techniques identified in the John Day RMP to help meet riparian habitat objectives when developing livestock grazing systems include:

- 1) Designing management activities in riparian zones that will maintain or, where possible, improve riparian habitat condition
- 2) Either eliminate hot season grazing (i.e., grazing during the hottest part of summer), or schedule hot season grazing on a rotational basis.

Starting in 1992 complete review of all grazing allotments within the Prineville BLM began. Subsequently allotment management plans with specified changes in management were completed for most of the allotments within the John Day Basin. In 1997, the BLM was nearing completion of this review and adjustment when a lawsuit was filed against the Prineville District BLM for its failure to complete the John Day River Management Plan. At this point the Prineville BLM halted the complete review of grazing allotments in order to focus on meeting the court ordered deadline for completing the Management Plan. At this point there were no listed fish species within the John Day River Basin. In June 1998 the Columbia River distinct population segments of bull trout portions of which inhabit the John Day Basin were classified as threatened. A year later in May of 1999 the mid-Columbia steelhead were classified as threatened. At that point the BLM notified NMFS that a management plan was in progress. Due to enormous workload and shortage of personnel the BLM was informed that NMFS was unable to designate any resources at that time towards early involvement in the streamlined consultation process. Consultation for ongoing actions within bull trout areas was already in progress with USFWS, since there were no changes of actions proposed in these areas consultation was not reinitiated with USFWS. In November 1999 the Draft John Day River Proposed Management Plan was released for public review. A copy of this document was sent to USFWS and NMFS which did not comment at that time. The direction given to the BLM from NMFS at that time regarding consultation was to formally consult on the final proposed actions. In June 2000 the Final John Day River Proposed Management Plan was released. A Draft Biological Assessment (BA) on the Plan was prepared and sent to NMFS in September 2000 to initiate formal consultation with regard to the Plan. Subsequent review and Level 1 & 2 meetings with BLM and NMFS and discussion with USFWS has resulted in this BA. Pending acceptance of this BA by NMFS and USFWS this document will constitute the final BA submitted to NMFS and USFWS for consultation regarding the Plan.



### **III. Listed Species**

The Middle Columbia River Evolutionary Significant Unit (ESU) of inland steelhead is currently classified as threatened by the National Marine Fisheries Service (NMFS)(FR Vol. 64, No. 57, 1999). The inland steelhead ESU occupies the Columbia River Basin and tributaries upstream and excluding the Wind River in Washington and the Hood River in Oregon, to and including, the Yakima River in Washington. Steelhead inhabiting the John Day River Basin within the Central Oregon Resource Area of the Prineville District Bureau of Land Management (BLM), are in the Middle Columbia ESU. The John Day steelhead population has not been supplemented with hatchery fish and therefore contains one of last remaining totally wild populations of steelhead trout in the Columbia River Basin.

Bull trout within the coterminous United States have been classified as threatened by the U.S. Fish and Wildlife Service (USFWS) (FR Vol. 64, No. 210, 1999). Bull trout inhabiting the John Day River Basin are included in this listing.

### **IV. Critical Habitat**

Critical habitat for mid-Columbia steelhead was designated by NMFS (FR Vol. 65, No. 32, 2000). Under this designation critical habitat includes all river reaches accessible to listed steelhead in the John Day River Basin. In the John Day River basin, steelhead spawning occurs widely throughout the basin, primarily within tributary streams to the upper main river and its forks. See Appendix A - Maps 1 and 2 (John Day Basin Land Ownership Patterns and John Day Basin Steelhead Habitat Types respectively) for a depiction of occupied steelhead habitat in relation to BLM-managed lands. The John Day River Basin contains approximately 1,800 miles of usable spawning/rearing habitat for steelhead trout.

### **V. Essential Fish Habitat**

Effective September 27, 2000, under direction of the revised Magnuson-Stevens Fishery Conservation and Management Act of 1996, consultation for chinook salmon essential fish habitat (EFH) is required. While this document primarily addresses steelhead with respect to actions and effects, the distribution and range of chinook habitat overlaps with that of steelhead. Effects on both species are similar except where otherwise noted in text. The final section of this document includes an EFH Assessment as described in 62 FR 66531.

## **Chapter 2 Fisheries Information and Watershed Baseline Conditions**

### **I. Fisheries Information**

#### **A. Steelhead**

##### **1. General Information**

All steelhead in the Columbia River Basin upstream from The Dalles Dam are summer-run, inland steelhead (Schreck et al., 1986; Reisenbichler et al., 1992). Life history information for steelhead of this ESU indicates that most middle Columbia River steelhead smolt at 2 years and spend one, two, or rarely, three years in the ocean prior to re-entering fresh water, where they remain up to a year prior to spawning (Collette et al., 1992).

Summer steelhead occur throughout the John Day Basin where habitat conditions are suitable, and accessible. Variable constraints on habitat accessibility do occur due to naturally present conditions which determine water flow in tributary streams. Yearly variations in precipitation can affect streamflows especially in the Lower John Day area. Low streamflows in this area can limit steelhead access due to not enough water flowing overland in tributary streams especially at the mouth to allow a continuous aquatic habitat for steelhead to migrate through, and thus cut off any spawning or rearing habitat within that tributary from production. This has occurred periodically within the basin, most recently in 1994 and 1999.

In the early 1960's, fishery managers released about 500,000 hatchery winter steelhead fry and limited numbers of pre-smolts used for experimental purposes. Few likely survived due to the use of improper stocks and high hauling mortality. No production releases of hatchery steelhead smolts were ever made in the John Day Subbasin. Hatchery releases for any purpose ceased in 1966 in favor of wild stocks. Today, the John Day steelhead run is composed entirely of wild stock, with straying rates running 4 to 8 percent, a rate accepted by experts to be normal and necessary to maintain genetic diversity of the wild stock (ODFW, 1990).

John Day River summer steelhead are currently classified as a wild population on Oregon's Wild Fish Management Policy Provisional Wild Fish Population List [OAR 635-07-529(3)]. A population meets ODFW's definition of a wild population if it is an indigenous species, naturally reproducing within its native range, and descended from a population that is believed to have been present in the same geological area prior to the year 1800. Human caused genetic changes, either from interbreeding with hatchery origin fish or habitat modification, do not disqualify a population from the wild classification under this definition.

##### **2. Life History and Population Characteristics**

Adult steelhead on their spawning migration enter the Columbia River in mid-May, pass over Bonneville Dam July-August, and enter the John Day River (JDR) as early as September, and as late as March. Emigration into the John Day Basin is dependant upon water temperatures and flows, and usually peaks in October (ODFW, 1999). Steelhead will likely hold in the Columbia or the lower Deschutes Rivers until water temperatures in the JDR are suitable.

Summer steelhead spawn in the basin from March to mid June. A majority of steelhead spawn in tributaries that enter the John Day River ranging from as low in the basin as Rock Creek, which is located near Condon, to those streams entering the upper main forks. About 20 percent may spawn in the upper main forks of the river, depending on spring runoff conditions. Typically the earliest spawning occurs in tributaries in the lower basin, probably because flows decrease earlier in these more arid drainages.

Steelhead eggs take about 30 days at 50 \_ F to hatch, and another two to three weeks to reach fry stage. Time required for incubation varies significantly with water temperature (ODFW, 1990). Fry emergence occurs in spring or early summer depending on time of spawning and water temperature during incubation.

Summer steelhead juveniles rear in the John Day basin for two to three years before migrating to the ocean as smolts. Rearing fish thrive in moderate gradient streams with high quality water, with summer water temperatures ranging from 50 to 65 degrees F. They also need streambank vegetation (grasses/sedges/, shrubs and trees) for food, cover, shade, nutrient cycling, good aquatic insect production, complex instream hiding cover, and instream large wood/structure. Ample pool habitat is essential in maximizing fish production.

Smolt migration out of the John Day Basin is staggered over several months (April to July), with peak timing in April and May (ODFW, 1999). Smolt size varies by stream depending on food abundance and rearing water temperatures. Generally, healthy wild smolts average 7 inches in length. Some may be as large as 10 inches in some streams (Beech Creek, for example).

Downstream smolt movement is quite rapid, taking 45 days or less for smolts to reach the ocean from upstream rearing areas. Smolts migrate to the ocean with very determined swimming and feeding along the way. While in migration corridor habitat of the lower John Day River (Below Kimberly, RM 185, see Table 2), smolts generally stay within the river thalweg, using water depth and turbidity for cover (ODFW, 1999). Smolts may stop and feed along backwaters and edges occasionally, or feed in the main current. Most smolts will reach the ocean by May, June, or July depending on the time of migration.

John Day summer steelhead typically return after one or two years in the Pacific ocean (termed 1-salt or 2-salt steelhead). About 80 percent of the John Day steelhead run are 2-salt fish. Typical of other summer steelhead stocks, very few steelhead return to spawn a second time in the John Day River Basin.

Table 2. John Day River Segments and habitat utilization by steelhead trout\*

<b>River Segment</b>	<b>Steelhead Habitat Use</b>
John Day River, Mouth (RM 0.0) to Kimberly (RM 185.0)	Migratory Corridor (No Rearing Habitat)
John Day River, RM 185.0 to RM 240.0 (Mount Vernon)	Juvenile Winter Rearing Habitat
John Day River, Mount Vernon (RM 240) to City of John Day (RM 248)	Juvenile Summer Rearing Habitat
John Day River, City of John Day (RM 248 to Headwaters)	Adult Spawning, Juvenile Rearing Habitat
South Fork John Day River, Mouth (RM 0.0) to Izee Falls (RM28.5)	Adult Spawning, Juvenile Rearing Habitat. No steelhead access above falls.
North Fork John Day River, Mouth (RM 0.0) to Camas Creek (RM 57.0)	Juvenile Winter Rearing Habitat. No Prineville BLM lands above RM 50.5
Middle Fork John Day River, Mouth (RM 0.0) to Highway 395 (RM 24.0)	Juvenile Winter Rearing Habitat
Middle Fork John Day River, Highway 395 (RM 24.0) to Headwaters	Adult Spawning, Juvenile Rearing Habitat

\*Source: ODFW, 1999.

Chilcote (1998), assessed abundance, trend, and recruitment patterns for all five populations of John Day steelhead: Lower mainstem (below Picture Gorge, RM 204), Upper Mainstem (above Picture Gorge), North Fork, Middle Fork, and South Fork. The general pattern in abundance for these populations shows a low point during the late 1970s followed by an increasing trend leading to peak counts during the late 1980s (Table 3). Recently, all populations have declined to lows below those observed in the late 1970s.

Table 3. Index of steelhead spawners per stream survey mile for the five populations of John Day summer steelhead 1974-2000 (ODFW 2001).

Year	Lower Mainstem	Upper Mainstem	North Fork	Middle Fork	South Fork
1974	4.5	7.0	0.0	7.8	12
1975	15.0	10.1	0.0	11.6	21.7
1976	7.8	9.0	7.1	16.1	11.1
1977	1.8	13.6	5.0	18.8	14.8
1978	9.5	7.5	2.5	16.0	8.5
1979	0.3	1.3	1.6	2.3	3.1
1980	5.6	6.6	4.8	5.3	6.5
1981	7.3	5.1	5.1	8.6	6.8
1982	5.1	5.1	6.3	7.6	12.0
1983	5.5	9.3	5.8	5.8	12.0
1984	5.8	8.1	3.5	4.8	10.0
1985	7.5	14.0	12.8	15.6	20.7
1986	22.5	21.2	12.3	22.3	15.5
1987	27.2	22.2	13.5	13.3	26.3
1988	16.7	28.5	9.6	24.2	30.3
1989	7.1	6.0	1.8	9.5	3.1
1990	6.3	8.6	2.0	6.3	10.5
1991	3.8	4.8	2.3	0.0	4.8
1992	6.8	13.6	5.3	18.8	9.0
1993	4.1	4.0	2.5	5.3	5.5
1994	1.8	6.8	3.3	6.6	7.8
1995	2.5	1.6	2.0	3.1	2.6
1996	3.3	2.8	5.6	3.3	2.1
1997	3.3	2.6	3.0	3.0	2.6
1998	2.1	4.3	3.0	3.1	1.5
1999	6.1	2.1	3.0	6.3	1.5
2000	15.8	4.3	7.0	7.6	4.1

The Lower Mainstem, Upper Mainstem, and South Fork populations have remained depressed for several years (Figures 1, 2, and 5). During the last four years, these populations have been



ower spawner densities were estimated in the 1970s, the levels observed in the 1990s cover a longer period of time (Chilcote, 1998).

Plots of spawner density indices for the Upper Mainstem (Figure 2), North Fork (Figure 3), and Middle Fork (Figure 4), populations all show a spike in abundance for the 1992 spawning year. A similar pattern was not observed in the Lower Mainstem and is indistinct in the South Fork (Chilcote, 1998).

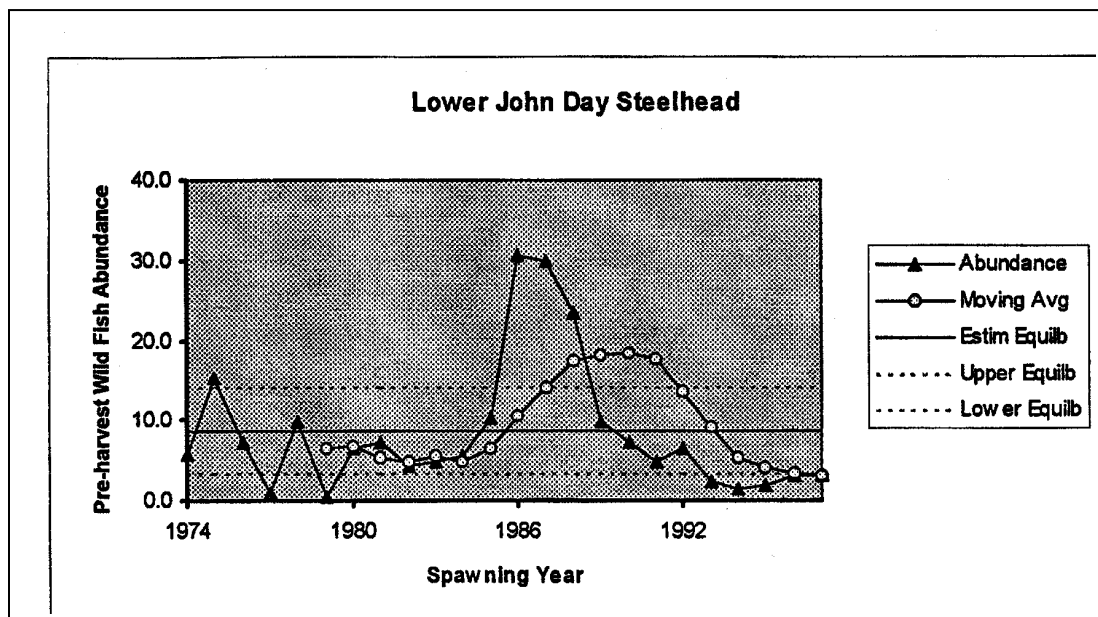


Figure 1. Annual and six-year moving average estimates of the pre-harvest abundance of wild steelhead in lower mainstem tributaries of the John Day River, 1974-97 relative to predicted population equilibrium ( $N^*$ ) and associated upper and lower confidence bounds derived from recruitment modeling. (Chilcote, 1998) (a six year moving average is used based on the typical maximum age (6 years) or steelhead spawners in Oregon)

According to Chilcote (1998), the spawner abundance analysis suggests the Lower Mainstem and South Fork John Day populations are the least healthy within the basin. The South Fork population in particular shows a decline in spawner densities large enough to warrant concern about its likely persistence.

Except for the South Fork John Day population, there are no obvious signs that steelhead populations in the basin are reproductively failing or at critically low population levels. The underlying recruitment relationship for the John Day populations suggest that their capacity to respond to environmental changes is still intact.

Chilcote (1998) studied seven mid-Columbia steelhead populations findings and data from this study indicated that - "populations examined appear to share a pattern of relatively high abundance during the mid-1980's, followed by a decline in the 1990's. This decline coincides



with decreases in smolt-to-adult survival as estimated from hatchery fish released from RBH (Round Butte Hatchery in Deschutes Basin). Because of this observation and the fact the decline in abundance is shared by all populations, the best explanation for the downward trend is common survival factors, most likely mainstem Columbia passage and ocean survival.” According to Chilcote (1998) the data suggest that much of the decline in recent years has been due to poor smolt to adult survival and not population failure within basins.

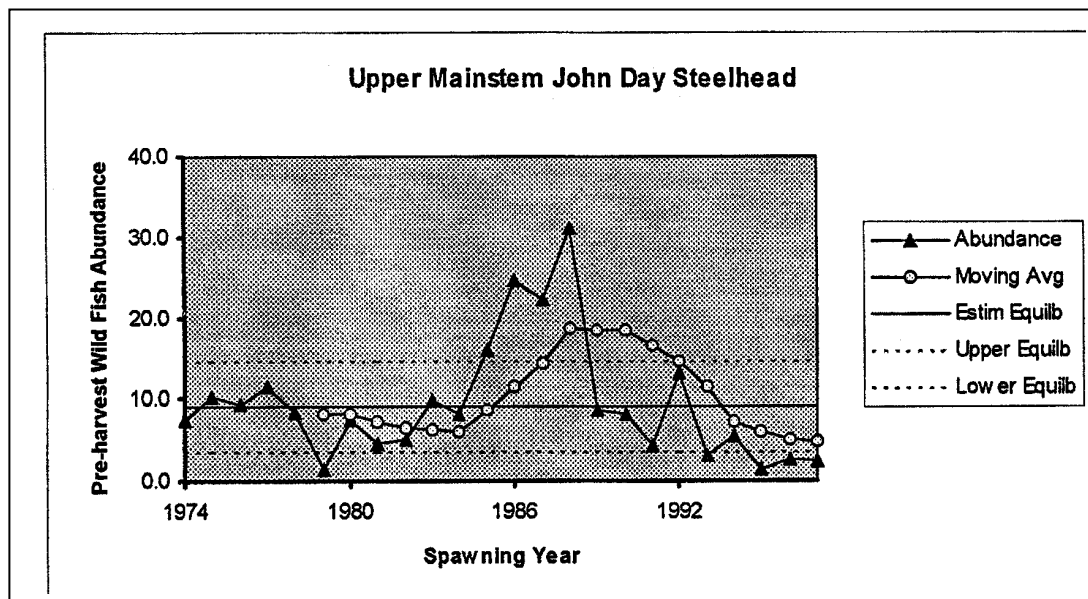
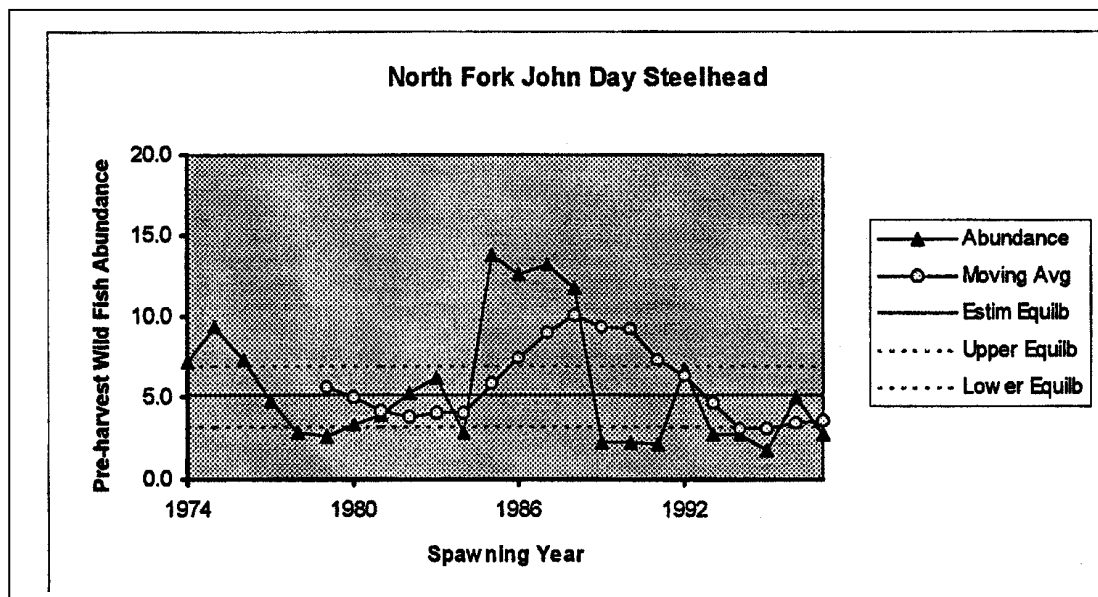


Figure 2. Annual and six-year moving average estimates of the pre-harvest abundance of wild steelhead in upper mainstem tributaries of the John Day River, 1974-97 relative to predicted population equilibrium ( $N^*$ ) and associated upper and lower confidence bounds derived from recruitment modeling. (Chilcote, 1998)

Assuming this pattern is cyclic, the observed declines can be expected to reverse in the next three to five years (Chilcote, 1998).

The South Fork population appears to warrant an extirpation warning. There has been a large decline (-50%) in the six-year moving average abundance of wild steelhead in this population over the last 18 years (Chilcote, 1998). The reason for this exceptional decline in the South Fork population as compared to other John Day populations is unknown (ODFW, 1999). Riparian conditions in the South Fork watershed have improved significantly in the last 20 years, particularly on BLM managed lands.

Figure 3.



Annual and six-year moving average estimates of the pre-harvest abundance of wild steelhead in the North Fork John Day River, 1974-97 relative to predicted population equilibrium ( $N^*$ ) and associated upper and lower confidence bounds derived from recruitment modeling. (Chilcote, 1998)

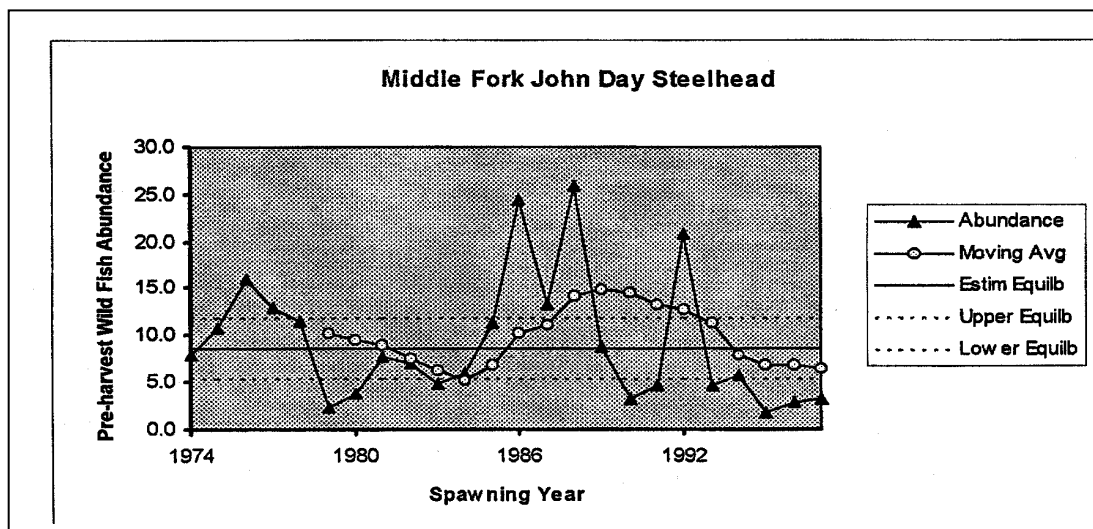


Figure 4. Annual and six-year moving average estimates of the pre-harvest abundance of wild steelhead in the Middle Fork John Day River, 1974-97 relative to predicted population equilibrium ( $N^*$ ) and associated upper and lower confidence bounds derived from recruitment modeling. (Chilcote, 1998)

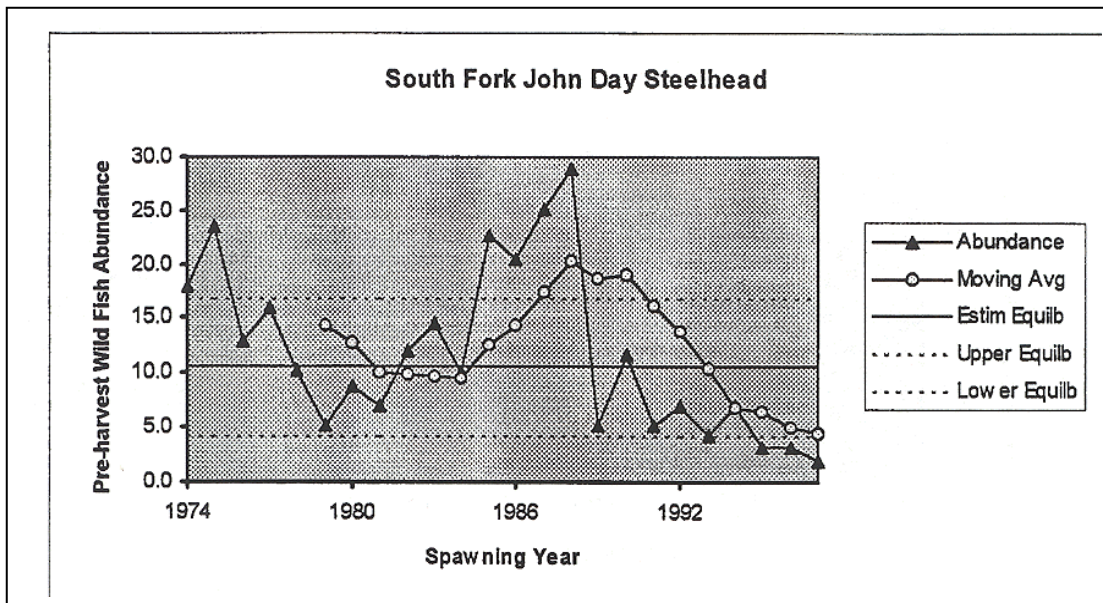


Figure 5. Annual and six-year moving average estimates of the pre-harvest abundance of wild steelhead in lower mainstem tributaries of the John Day River, 1974-97 relative to predicted population equilibrium ( $N^*$ ) and associated upper and lower confidence bounds derived from recruitment modeling. (Chilcote, 1998)

Although the North Fork population appears to be returning to expected equilibrium abundance levels, all four remaining populations in this basin remain depressed. Recruitment modeling suggests the resiliency of John Day steelhead populations is relatively intact. However, the data do not support a clear conclusion that steelhead densities in this basin have bottomed-out and are returning to equilibrium levels (Chilcote, 1998).

Hatchery fish are not released into any of the five populations examined in the John Day Basin. In addition, this basin has the distinction of being one of the few large basins in Oregon with no history of a steelhead hatchery program. Although stray hatchery steelhead are caught in the lower mainstem, especially in the fishery below Cottonwood Bridge (RM 40), they have been rare in the upper basin. It is estimated that hatchery fish comprise less than 5 percent of the naturally spawning population (Chilcote, 1998).

### **3. Production Constraints**

#### **a. Natural**

Throughout the John Day Basin summer steelhead utilize tributaries for critical life history phases such as spawning and rearing. Many of these tributaries naturally exhibit low late season flows and high summer water temperatures. In some areas historic stream bank degradation, poor riparian habitat conditions and ongoing irrigation withdrawals intensify these conditions.

Passage blocked naturally by Izee Falls on the South Fork John Day River (RM 28.5) prevents steelhead production in this segment (upper segment 10 and segment 11) of the South Fork and numerous tributaries to it.

Prolonged drought conditions that started in the subbasin in 1984 or 1985 and continued more or less until 1994, exacerbated mainstem and tributary habitat deficiencies and may have contributed significantly to declining summer steelhead populations in the JDR basin.

Natural events outside the subbasin also constrain natural production in the subbasin. According to Chilcote (1998), all seven Oregon populations in the Middle Columbia ESU (Lower John Day, Upper John Day, S. Fork John Day, N. Fork John Day, M. Fork John Day, Deschutes River, and the Umatilla River) appear to share a pattern of relatively high abundance during the mid-1980s, followed by a decline in the 1990s. This decline coincides with decreases in smolt-to-adult survival as estimated from hatchery fish released from Round Butte Hatchery. Because of this observation and the fact the decline in abundance is shared by all populations, the best explanation for the downward trend is common survival factors, most likely mainstem Columbia passage and ocean survival (Chilcote, 1998).

According to Taylor (1997), scientists have found that chinook salmon returns in the Northwest show long-term trends which closely follows the climate cycles. Anderson (1995), used the “Pacific Northwest Index” (PNI) to distinguish cool, wet periods from warm, dry periods using data which goes back to 1896. Anderson then compared PNI with Columbia River spring chinook salmon returns data which goes back to 1940. The correlation between spring chinook and PNI is very strong, and indicates that salmon returns increase during cool, wet periods and decline during warm, dry periods. The period 1976-1994 was considered a “Generally dry and warm” cycle. While there are numerous habitat parameters throughout all life history phases for steelhead, natural variability from climate cycles may be a very significant influence (Taylor, 1997) and probably the parameter over which management actions have the least control.

There are indications that global ocean and atmosphere conditions are the cause of long-term climate variations which affect precipitation trends in the Northwest. There is also evidence that a switch in regimes occurred in late 1994, and that conditions which tend to yield wet, cool winters in the Northwest have returned (Taylor, 1997).

Ocean productivity is known to be cyclic and responsible for trends in anadromous species survival and abundance. Natural variation in ocean productivity and subsequent survival of summer steelhead in the ocean environment may be an important factor in John Day River basin summer steelhead abundance. Protection and enhancement of subbasin habitat and summer steelhead populations remains; however, very important.

Low flow and high water temperatures in the Columbia River during drought years magnify mainstem dam passage problems for both adult and juvenile summer steelhead.

#### **b. Anthropic**

A variety of man's activities outside and within the basin constrain natural production. Recreational harvest of wild summer steelhead in the John Day River Basin may have had a constraining effect on population size. Wild adult summer steelhead in the John Day River Basin have been protected from recreational harvest by regulation since September of 1995. Available data suggest that most wild juvenile migrants are 7 inches or less in length, and are protected from harvest by the 8 inch minimum length limit that has been in effect since 1997. Prior to 1997, the minimum length for harvest on trout was 6 inches. Bait fishing is allowed in all areas open to angling in the basin and incidental catch of juvenile and adult steelhead migrants is a possibility.

Based on studies from other river basins in the Pacific Northwest, there is speculation that recreational hooking and handling mortality of wild steelhead adults by hook and line anglers may contribute nearly 10 percent adult mortality of all caught and released fish (ODFW, 1999). This recreational angler induced mortality may be a significant management concern.

Several unscreened irrigation diversions in the Upper John Day subbasin contribute to losses of juvenile summer steelhead.

Passage conditions for both juvenile and adult anadromous fish at Columbia River mainstem dams contribute to declines in wild summer steelhead. The Dalles Dam, which all John Day River migrants must pass, has one of the lower rates of juvenile salmonid passage efficiency for mainstem Columbia dams due to a lack of turbine screening and effective juvenile bypass facilities. Bonneville Dam, particularly Powerhouse 2, does not have particularly effective juvenile turbine screening. Increased spill of water at both The Dalles and Bonneville dams to increase survival of Federal Endangered Species Act listed Snake River salmon should result in better survival of wild John Day River summer steelhead at these dams. Longer travel time for juveniles through dam created reservoirs in the Columbia, increased water temperature in the reservoir environment, and increased predation near mainstem dams all contribute to increased losses of juvenile and adult wild summer steelhead.

Harvest of wild summer steelhead by treaty tribal fisheries in the mainstem Columbia River is governed by the Columbia River Fish Management Plan (CRITFC 1988). This plan, agreed to by the four treaty tribes, the United States of America, and the states of Oregon, Washington, and Idaho, directs mainstem harvest decisions on wild summer steelhead using run sizes at Bonneville Dam. Treaty tribal impacts to wild summer steelhead are not to exceed 15% of the Group A (those crossing Bonneville Dam April 1 to August 25) wild escapement and 32% of the Group B (those crossing Bonneville Dam August 26 to October 31) wild escapement during fall treaty seasons. Harvest of wild summer steelhead by treaty tribal fisheries in the mainstem Columbia River has been and will continue to be a source of mortality to John Day River basin origin wild summer steelhead.

Habitat problems affecting most inland steelhead trout populations include irrigation diversions and livestock grazing. These activities can modify river and stream channels; remove riparian

vegetation; block migration routes seasonally; decrease summer flows; and increase summer water temperatures. Some populations have retreated to headwater areas as a result of these activities, causing extensive population fragmentation and declines in numbers (Kostow, 1995). Several efforts exist within the basin, specifically watershed councils in the North Fork of the John Day subbasin and the Upper Mainstem subbasin, to offer alternative methods of irrigation withdrawal to minimize impacts to habitat. Although BLM does not manage private lands, BLM is working in concert with local watershed councils where issues addressed include removal of push-up dams for irrigation and replacing them with pumping stations. Implementation of these methods improves efficiency of withdrawals and improves passage concerns.

## **B. Bull Trout**

### **1. General Information**

Until recently little specific information on the status or biology of bull trout in Oregon was available. During the past decade there has been a concerted effort to find out more about the bull trout. Since 1990, ODFW, Forest Service (FS), and BLM stream survey crews have been documenting bull trout distribution and relative abundance. Bull trout distributions discussed in this analysis are referenced from the latest information from ODFW, BLM, and Forest Service fisheries biologists.

### **2. Life History and Population Characteristics**

Bull trout typically have more specific habitat requirements than other salmonids. Because of their specific requirements, bull trout are more sensitive to changes in habitat and less able to persist and thrive when habitat conditions are altered or degraded (Rothschild and DiNardo, 1987). Channel and hydrologic stability, substrate, cover, temperature, and the presence of migration corridors consistently appear to influence bull trout distribution or abundance (Ziller, 1992).

Adults usually spawn from August through November in the coldest headwater tributaries of a river system, and require water temperatures <10C for spawning, incubation, and rearing (Weaver and White 1985). Although migratory bull trout (fluvial or adfluvial) may use much of a river basin through their life cycle, rearing and resident fish often live only in smaller watersheds or their tributaries (second-fourth order streams) (Ziller, 1992).

Juvenile bull trout closely associate with stream channel substrates, often using interstitial spaces for cover (Fraley and Shepard 1989). A close association with channel substrates appears more important for bull trout than for other species. This specific rearing habitat requirement suggests that highly variable stream flows, bed movements, and channel instability will influence the survival of young bull trout, especially since embryos and alevins incubate in substrate during winter and spring (Rieman and McIntyre 1993).

Increases in fine sediments to streams reduce pool depths, alter substrate composition, reduce interstitial space, and cause channels to braid. These changes degrade fish habitat and reduce rearing bull trout survival and abundance (Reiman and McIntyre 1993). Bull trout usually associate with complex forms of cover and with pools. Juveniles live close to instream wood, substrate, or undercut banks and in pocket pools formed by boulders. Young-of-the-year fish use side channels, stream margins, and other low velocity areas. Older and larger fish use pools and areas with large or complex instream wood and undercut banks (Reiman and McIntyre 1993). Instream wood correlated significantly with bull trout densities in streams sampled in the Bitterroot National Forest (Reiman and McIntyre 1993).

Migratory corridors connect safe wintering areas to summering or foraging areas. Movement is important to the persistence and interactions of local populations within the metapopulation. Open corridors among populations are required to ensure gene flow, refounding of locally extinct populations, and enhancement of locally weak populations. Migratory populations of fish are likely to stray more between streams than resident populations, increasing the potential for such dispersal (Reiman and McIntyre 1993).

Water temperature is the most critical factor that influences bull trout distributions, but critical thresholds however, are poorly defined. Water temperatures in excess of 15C are thought to limit bull trout distribution (Fraley and Shepard 1989). It is not known whether the influence of water temperature is consistent throughout the life cycle or whether a particular stage is especially sensitive. Increasing water temperatures increase the risks of habitat invasion by other species that may displace bull trout.

Bull trout have very low levels of variation within populations (John Day, Umatilla, Grande Ronde Basins, etc) but are highly differentiated between populations (Spruell and Allendorf 1997). The John Day and Grande Ronde bull trout populations tend to be similar genetically, however a unique allele frequency was found in seven of ten John Day populations which was not present in any of the 11 Grande Ronde populations (Spruell and Allendorf 1997).

According to the Oregon Department of Fish and Wildlife (ODFW) publication, Status of Oregon's Bull Trout (1997), and ODFW biologists, migrating bull trout use the Upper John Day River down to the City of John Day (RM 247.8) during winter season when water temperatures are suitable. Bull trout "occupied" habitat includes spawning, rearing, or resident adult, and migratory winter habitat. BLM grazing allotments in this analysis area do not contain any occupied bull trout habitat, but may affect tributary streams which drain into occupied habitat.

Current spawning and rearing habitat in the Upper John Day River subbasin includes Reynolds, Deardorff, Rail, Roberts and Call Creeks, and the John Day River upstream from the mouth of Reynolds Creek (See Map). All spawning and rearing habitat in the

Upper John Day River is upstream of the analysis area, except for lower Reynolds Creek.

According to the Buchanan (1997), historical bull trout habitat (now presumed unoccupied) in the MFJDR extended from RM 20 to RM 39, and migratory habitat (winter use) exists from RM 39 to headwaters. Bull trout "occupied" habitat includes spawning, rearing, or resident adult, and migratory winter habitat. BLM lands within bull trout migratory habitat (RM 39-43) have no permitted grazing allotments. BLM grazing allotments may affect only historical bull trout habitat on the MFJDR, and potentially migratory habitat downstream in the North Fork John Day River.

Current spawning and rearing habitat in the Upper Middle Fork (upstream of the analysis area) is limited to Clear Creek (above Hwy 26), Big Creek, and Granite Boulder Creek. Full historic distribution and abundance is not well known, but local longtime residents report having caught bull trout in Indian, Butte, Vinegar Davis, and Big Boulder Creeks, and in Mainstem Middle Fork from Big Creek to Phipps Meadow (Claire and Gray, 1993). Migratory bull trout likely use the upper Middle Fork (from Big Creek to headwaters) seasonally. Historic habitat extends down the Middle Fork from RM 39 to RM 20.

According to Buchanan (1997), and ODFW biologists, migrating bull trout use the NFJDR in the analysis area down to the mouth of Wall Creek (RM 22.5) during winter season when water temperatures are suitable. Bull trout "occupied" habitat includes spawning, rearing, or resident adult, and migratory winter habitat. BLM managed lands within six grazing allotments are adjacent to bull trout winter migratory habitat. The North Fork John Day River currently supports spawning and rearing habitat upstream of the analysis area in Clear, Crane, Desolation, S. Fk. Desolation, Big, Baldy, S. Fk. Trail and Winom Creeks, and in the N. Fork John Day above Gutridge. Historic habitat included Granite Creek, N. Fk. Desolation Creek and Meadow Brook Creek. The upper North Fork contains the most bull trout habitat in the John Day Basin (Claire and Gray, 1993). Discovery of bull trout down to Spray in the mainstem in the winter time has lead to a change in the effective downstream winter migratory boundary.

### **3. Production Constraints**

Salmonid habitat has decreased in both quantity and quality in the analysis area in recent history due to increased human activities and some natural events.



## **a. Natural**

Natural events such as insect infestations and epidemics, large catastrophic forest fires, and basin wide and localized flooding have further contributed to the degradation of riparian and instream habitats. It is difficult to estimate how land management practices may have exacerbated the severity and intensity of natural events impacting riparian habitat conditions.

The seasonal distribution of runoff and discharge creates water quantity limitations throughout the John Day Basin. By mid to late summer, snowpack and ground water supplies are depleted, streams are carrying less water, and generally there is insufficient flows to satisfy all the demands for out-of-stream and instream uses (OWRD, 1986).

## **b. Anthropic**

Land uses such as timber harvesting, road construction, livestock grazing, placer mining, agriculture practices (irrigation water diversions, and encroachment on riparian zones), and stream channelization have impacted salmonid and bull trout habitat in the basin.

Improperly managed livestock grazing, surface water irrigation diversions, stream channelization, timber harvesting, and road building activities have impacted fish habitat by damaging or suppressing riparian vegetation, impacting water quality, reducing habitat complexity, and destabilizing streambanks and watersheds (ODFW 1990). According to the Oregon Water Resources Department (OWRD, 1986), watershed conditions may be contributing to discharge variabilities. Disturbance of soils and vegetative cover by domestic and wild animal foraging, road building, and timber harvesting have altered the watershed. Soils have been compacted and vegetative cover has been reduced. This has the effect of increasing soil erosion potential, decreasing precipitation infiltration and ground water storage, and speeding runoff.

Irrigated agriculture activities cover a significant portion of the Upper John Day Area (about 14,400 acres). These uses are concentrated along the the John Day River valley and within the Strawberry, Indian, Pine, Little Pine, Dads, and Dixie Creek drainages. Pasture grass and meadow hay production are the principal crops being grown. Flood irrigation is the dominant method for delivering water to pasture lands (OWRD, 1986). Irrigated agriculture activities are minor within the Middle Fork subbasin, with the most use occurring near the town of Long Creek. Irrigation withdrawals in the upper Middle Fork (above Galena at RM 46) could be affecting downstream water quality.

Irrigation withdrawals in some stream segments limit production of salmonids. Fish habitat problems associated with surface water diversions (reduced available and suitable habitat, unsuitable water temperatures, and dewatering of stream channels) are

compounded during drought years when stream flows fall below normal (ODFW 1990). Low streamflows mainly affect the rearing and instream movement of juvenile and resident adult salmonids.

Logging practices throughout the John Day Basin have degraded water quality in streams and caused both direct and indirect impacts to fish and aquatic resources. The following is a list of fishery related impacts that have resulted from logging activities (ODFW 1990).

1. Impaired water quality from increased sedimentation and water temperatures, and lowered dissolved oxygen levels.
2. Direct stream habitat losses resulting from instream channel changes and loss or lack of large woody materials.
3. Removal of riparian vegetation canopy resulting in reduction of instream food production and increased stream temperatures.

Timber harvesting on the private lands has been more extensive than on the BLM managed lands, and likely has impacted riparian habitats more. Forested BLM tracts in the analysis area have had limited timber management activities and still contain a good mix of large overstory trees.

## **II. Baseline Conditions for the John Day River and Associated Corridor**

The proposed management plan is organized spatial around river segments. There are eleven (11) separate segments addressed in the management plan from the mouth of the mainstem John Day to the headwaters of the mainstem, South Fork, North Fork and Middle Fork. The following section contains an overall framework of baseline conditions describing the entire John Day corridor and then specific conditions organized by segment within the 6<sup>th</sup> field watershed boundaries.

### **A. General Baseline Conditions for the entire John Day River Basin**

The mainstem John Day River flows 284 miles from its source in the Strawberry Range to its mouth at River Mile (RM) 218 on the Columbia River (See Map 1 in Appendix A). The largest tributary in the John Day basin is the North Fork John Day River, which originates in the Blue Mountains at elevations near 8,000 feet. It flows southwesterly for 117 miles and joins the mainstem near Kimberly. The Middle Fork John Day River originates just south of the North Fork and flows in a similar direction for 75 miles until they merge about 31 miles above the community of Kimberly. The South Fork John Day River, tributary to the mainstem near Dayville (RM 212), extends 60 miles north from its headwaters in the southwest portion of Malheur National Forest (ODFW 1990).

The John Day River basin drains nearly 8,100 square miles of an extensive interior plateau covering central and northeastern Oregon. Elevations range from about 265 feet at the confluence

with the Columbia River to over 9,000 feet in the Strawberry Range. Land forms in the basin range from plateaus in the northwest to glaciated alpine peaks in the southeast. The basin includes portions of the Deschutes-Columbia Plateau and the Blue Mountains physiographic provinces.

Average annual discharge of the John Day River into the Columbia River is slightly more than 1.5 million acre-feet. Due to variations in yearly weather patterns, the total annual discharge has varied between 1 million and 2.25 million acre feet. As is typical of free flowing rivers in semi-arid environments, the annual range of flows for the John Day River is variable. At McDonald Ferry (RM 21), the peak flow during the October through September water year typically is over 100 times greater than the lowest flow during the same water year. Peak flows can vary as much as 300-700% from year to year.

## **1. Climate**

The climate in the John Day basin ranges from sub-humid in the upper basin to semi-arid in the lower basin. Mean annual temperature is 38\_ F in the upper basin, to 58\_ F in the lower basin. Throughout the basin, actual temperatures vary from sub-zero during winter months to over 100 \_ F during the summer. Seventy percent of the precipitation falls between November and March. Only 5% of the annual precipitation occurs during July and August. The upper elevations receive up to 50 inches of precipitation annually, and 12 inches or less fall in the lower elevations. The average frost-free period is 50 days in the upper basin and 200 days in the lower basin.

According to the state climatologist, the Northwest experiences 20- to 25-year cycles between wetter than average years or mostly dry years. The dry years tend to be warm, and the wet years cool. The years from 1975 to 1994 were a very dry period; the entire state saw two significant droughts and 10 consecutive dry years. Some research suggests that we have now entered a wet and cool cycle (Taylor 1999).

## **2. Energy and Minerals**

### **a. Agencies Regulating Mining**

The BLM administers mining on BLM-administered lands. Those wishing to mine on lands within the WSR corridor, except for casual use, must submit a detailed plan of operations to the BLM Prineville District Office and receive the approval of that office before mining. A reclamation bond must be obtained in an amount determined by BLM for any mining operations in the river corridor.

The law does not require the BLM to be notified for “casual use” mining operations. Casual use is when prospecting or mining activity will cause only negligible disturbances to the land and resources, does not require the use of mechanized earth moving equipment or explosives, and/or does not involve the use of motorized vehicles in areas designated as closed to off-road vehicles.

The Oregon Division of State Lands (ODSL) issues prospecting permits for exploration and mining activities within the state on private, state or federal lands. The ODSL also issues

removal-fill permits for activities occurring in waters of the state. Individual removal-fill permits and Land Board approval are required in Oregon State Scenic Waterways, except that no permit is required for gold panning if less than 5 cubic yards per year per stream are moved. Other permits may be required depending on the nature and location of the proposed activity. Refer to ODSL bulletin “Placer Mining In The State Of Oregon” for more details.

The Oregon Department of Environmental Quality (ODEQ) issues two permits to protect water quality: National Pollution Discharge Elimination System (NPDES) permit and Water Pollution Control Facilities (WPCF) 600 permit. The NPDES General Permit 700-J is required to operate an instream suction dredge of no more than 40 horsepower and to discharge the resulting wastewater into the waters of the state. The WPCF 600 permit is required for small scale, non-chemical, off-stream, placer mining activity.

The Oregon Department of Fish and Wildlife (ODFW) publishes the brochure “Oregon Guidelines For Timing to Protect Fish and Wildlife Resources.” The information in this brochure is necessary to ensure that requirements of the Department of Environmental Quality’s General Permit 700-J (to not dredge when fish eggs could be in the gravel) are met.

Other permits may be required by other agencies depending on the proposed activity.

Mining in BLM Wilderness Study Areas (WSAs) is regulated under the 43 CFR3802 regulations. Any claims filed in a WSA would be subject to the guidelines of the BLM Interim Management Policy (IMP). No leasing or disposal of salable minerals is permitted in WSAs.

#### **b. Locatable Minerals**

Mining has been an important use in the upper John Day basin for over a century. Mining for gold and other locatable minerals continues, or has occurred recently, on the upper North Fork, upper Middle Fork, and on tributaries of the upper mainstem John Day River. Bentonite is currently being mined along the lower mainstem John Day River near Clarno, but not within the river corridor.

#### **c. Salable Minerals**

Salable minerals, primarily rock and gravel used for road construction, is mined throughout the basin. There are several of these operations on private, state and public land close to the river in the upper mainstem John Day River. In Segment 4, an operation exists across the highway from the river but within the State Scenic Waterway boundary near Muleshoe Creek. Operations on the South Fork are separated from the river by BLM or county roads and are located at Smokey Creek and Cougar Creek. Rock and gravel operations occur in the lower part of the basin but are restricted to areas outside of the river corridor.

#### **d. Leasable Minerals**

There is no leasing of fluid minerals within sections of the corridor that are Wilderness Study Areas. In other parts of the corridor, a restrictive “no surface occupancy” stipulation for fluid minerals exploration and development is maintained on lands identified as nationally significant or visually sensitive in the Two River RMP area and with standard stipulations in the upper John Day (and South Fork) basins.

Exceptions to the “no surface” occupancy stipulation are evaluated using the following criteria:

1. Evidence of exploration or similar activities would not be visible from the surface of the John Day River.
2. All activities involving exploration would use existing roads to the fullest extent possible.
3. Any proposed exploratory drilling pad or road construction for access to a drilling site would be located to avoid canyon slopes and areas of high visibility. In these areas, roads and drilling sites would be fully rehabilitated when operations have been completed.

If leases are issued with the “no surface” occupancy stipulation, the criteria for exception would be included in the stipulation.

### **3. Water Quantity and Quality**

The large fluctuation in river flow over the course of a year, and from year to year, is a product of climate, geomorphological process, and the free-flowing condition of the John Day River. Peak discharge usually occurs from March through May. Seasonal low flows typically occur in August and September (Moffatt et al. 1990). Extreme flood events tend to occur during December and January when warm temperatures and extremes in precipitation result in rain on snow events, which lead to extreme run-off and increases in stream discharge. Extreme high and extreme low flows recorded at the McDonald Ferry gauging station (USGS 14048000) for the period of 1904 to 1996 range from a high of 42,800 cubic feet per second (cfs) for December 24, 1964, to a low of zero cfs for September 2, 1966, August 15 through September 16, 1973, and August 13, 14, and 19 through 25, 1977.

Mean annual daily discharge is 2,103 cfs (Moffatt et al. 1990). The annual water yield has shown multi-year cycles that generally follow state climatic wet-dry cycles. The 10-year moving average for annual discharge measured at McDonald Ferry peaked in the early 1920s at nearly 1.8 million acre-feet. It hit a low around 1940 at about 1 million acre-feet, and peaked again in the late 1950s at 1.8 million acre-feet. In the 1960s, it again hit a low near 1.2 million acre-feet.

The majority of water in the John Day Basin is derived from the upper watershed. As a result, water quantity and quality in the river below Kimberly at RM 185 are determined more by input from upper basin tributaries (such as the North Fork, South Fork and upper mainstem) than by inputs originating below Kimberly (OWRD 1986). Therefore, water quantity and quality has little opportunity to be influenced after entering the lower basin.

The flow regime affects the shape of the river channel, the ability of riparian sites to support vegetation, and the extent that recreationists can enjoy the river. For example, river flow affects water temperature, which has consequent effects on dissolved oxygen and the suitability and productivity of habitat for fisheries production. Most water quality problems in the John Day Basin stem from historical mining and dredging, livestock grazing, cumulative effects of timber harvest and road building, and water withdrawals (OWRD 1986, ODEQ 1988). Soils and geomorphological processes that drive the system contribute to naturally elevated sediments in the basin, especially Segments 10 and 11.

The ODEQ has identified much of the John Day Basin as water quality limited (see Table 4). This designation derives from the condition of waters that do not meet instream water quality standards for certain water quality parameters for all or a portion of the year. Water quality parameters not meeting ODEQ standards in the John Day include: temperature, dissolved oxygen, habitat modification, flow modification, and bacteria (ODEQ 1998). Of these, water temperature is the only parameter that has been monitored intensively throughout the basin.

Table 4. John Day River Segments and 303(d) Listing Criteria	
River Segment	303(d) Listing Criteria
Segment 1	Temperature
Segment 2	Temperature
Segment 3	Temperature
Segment 4	Bacteria, Dissolved Oxygen, Flow Modification, Temp
Segment 5	Bacteria, Dissolved Oxygen, Flow Modification, Temp Temperature
Segment 6	Temperature
Segment 7	Temperature
Segment 8	Temperature and Habitat Modification
Segment 9	Temperature
Segment 10	Temperature
Segment 11	Temperature

All segments of the Wild and Scenic River are on the ODEQs 303(d) list of affected waters for temperature. The Upper John Day from the North Fork confluence (RM 185) to Reynolds Creek (RM 274) is listed for bacteria, dissolved oxygen, flow modification, and temperature (ODEQ 1998). Low summer flows contribute to problematic eutrophication and consequent elevation of pH and dissolved oxygen in the South Fork and mainstem John Day rivers (Cude 2000).

The North Fork John Day is listed by ODEQ as water quality limited for habitat modification and temperature. In this condition, the North Fork does not meet PACFISH pool frequency management objectives. Because the North Fork contributes 60% of the flow to the mainstem John Day, the influence of the North Fork on temperature and, therefore, fisheries is significant. Converse to the North Fork, the basin drainage area between Service Creek and McDonald Ferry gaging stations contributes only 13%, 9%, and 1% of the flow during July, August, and September, respectively, to the mainstem John Day. This exemplifies the limited influence that flows in the lower basin have on water quality and quantify.

During the summer months from approximately July to September, groundwater provides much of the base flow to the Lower John Day River. Although ODEQ has only listed the lower river as water quality limited for temperature, other water quality constituents such as total phosphates, biochemical oxygen demand, and fecal coliform could also become problematic during late summer when flows are the lowest and water temperatures are the greatest (Cude 2000).

Temperature gains per river mile in the John Day vary widely between basins and are influenced by aspect, channel geometry, vegetation, river width, and latitude. The ODEQ will model the temperature load allocation throughout the John Day Basin during their TMDL process in 2003 (North Fork), 2004 (Upper John Day), and 2005 (Lower John Day).

As a part of the agency's responsibility to comply with the Clean Water Act, the BLM will work with ODEQ, Oregon Department of Agriculture (ODA), and private landowners to develop a Total Maximum Daily Load (TMDL) and a companion Water Quality Management Plan (WQMP) for the portion of the John Day Basin where BLM land management could affect a change in water quality. The BLM protocol for addressing 303(d) affected waters will guide development of Water Quality Restoration Plans (WQRPs) that will be incorporated into the ODEQ WQMPs. The WQMPs will guide restoration actions to improve water quality in those areas where BLM land management actions have an effect.

#### **4. Water Rights and Use**

Water rights in the John Day Basin are assigned for consumptive use, instream flow rights, and maintenance of Federal and State Scenic Waterways. All waters in Oregon are publicly owned, so users must obtain water rights from the Oregon Water Resources Department (OWRD) to use waters under ground, in a lake, or flowing in a stream. This principle of prior-appropriation is the foundation of water law in Oregon. Water rights are attached to the land where they were established. Water may only be legally diverted if it is used for a beneficial purpose without waste. The OWRD is responsible for administering state water laws and ensuring the wise use and conservation of water. State waters must be used for beneficial purposes at least once every five years or a right is forfeited.

The Oregon Water Resources Commission (OWRC) is responsible for setting policy and making long-range plans for use and control of the state's water resources. Obtaining a water right requires application and permit issuance through the OWRD. Additional water right permits for consumptive uses are issued based upon the availability of water to satisfy the permit. In 1993, OWRD began determining water availability using a model called the Water Availability Resource System. This model is based on an 80% exceedence value for stream flows within segments by month (80% of the time flow meets or exceeds this level). Available water is equal to the 80% value less current authorized use which includes state determined scenic flow requirements (Diack flows), less any instream water rights. This means new water right permits would only be issued in months where a surplus exists after all current uses, Diack flows, and instream water rights are satisfied. No surplus water is available during the irrigation season on the John Day River, so OWRD has ruled that no additional water rights will be issued within the basin for the period from May to October.

##### **a. Consumptive Use**

Consumptive use occurs when water is removed from the stream and used for purposes such as irrigation or mining. Water in the John Day Basin has been used for these purposes since the early 1860s (OWRD 1986). Competition for limited river water increased as population and acres under cultivation increased in the basin. Established water uses were adjudicated by 4 court decrees; Cochran Creek and its tributaries in the North Fork subbasin (1910), Cherry Creek and its tributaries (1922), Bridge Creek and its tributaries in (1937), and the remainder of the John Day Basin (1956). These water right adjudications resulted in the legal assignment of rights in these basins.

Since the 1860s, about 4,500 rights have been established for 6,200 cfs flow. Subsequent to that time approximately 800 rights that account for 3,600 cfs have been canceled. Sixty percent of historical water right appropriations were assigned between 1860 and 1920. A moderate increase in water rights allocation occurred from 1920 to 1970, with a larger increase occurring during the 1970s. Recently, the number of applications for water rights has been declining. The total water diversions permitted for the basin account for 76% of the basin's average annual discharge of 1,475,000 acre feet. Actual consumption is less than the permitted



rights. Basin discharge is adequate to satisfy all water rights on an average annual basis, even in critically low flow years. However, because of the wide variation in seasonal distribution of runoff, there is insufficient flow during the late summer to satisfy all the water rights when they are most needed (OWRD 1986). Irrigation accounts for over 69% (by volume) of all water used in the basin. While mining accounts for 12% of allocated water rights in the basin. Solley 1997 and Solley et al 1990, compilation reports on water availability found no reported data for water use related to mining activity.

Incidental, short-duration water uses for recreation site maintenance or wildlife guzzler refills do not require water rights. These uses do not involve continuous water removal that would have a rate or duty, much like the rate or duty assigned to a consumptive or instream water right, associated with it.

Water rights associated with BLM-managed lands could result in the consumption of approximately 0.8% of the total John Day River Basin water for irrigation (OWRD 1986). Currently, about 50% of water allocated to BLM-managed lands is available for irrigation (0.4% of basin irrigation water). The other 50% is retained for instream uses.

#### **b. Instream Flow Rights**

Instream flow rights are water rights reserved instream for the benefit of fish, wildlife, recreation, and water quality. Three state agencies are authorized to request instream water rights. ODFW may request instream rights for public uses relating to the conservation, maintenance, and enhancement of aquatic and fish life, wildlife, and their habitat. The ODEQ may request instream rights to protect and maintain water quality standards established by the Environmental Quality Commission. The Oregon State Parks and Recreation Department may request instream rights for public uses related to recreation and scenic attraction. Currently, there are 41 instream water rights and 17 pending applications for instream rights. These rights are regulated much like consumptive water rights and are assigned according to priority.

The federal government is not allowed to apply for or hold state instream water rights under State of Oregon water laws. Instead, they may lease or purchase an existing right for conversion to an instream right to be held by the OWRD for the people of Oregon. In order to improve instream flows and in order to protect and enhance river values associated with these rights, the BLM may: 1) consult and coordinate with state agencies that can apply for and hold an instream water right, or 2) acquire land with a consumptive water right and transfer that right to an instream right to be held in trust by the OWRD.

About 50% of BLM's existing water rights are maintained instream through non-use or instream lease agreements with OWRD. According to current management practices a BLM water right maintained instream through non-use or an instream lease agreement would manage the full rate as an instream flow from the original

BLM point of diversion downstream to the next water right point of diversion, without guarantee of any instream flow below the next point of diversion. If, however, the BLM water right was transferred to OWRD to hold in trust, the OWRD would manage a portion for a specific allocation, to be determined by OWRD, as an instream flow right from the original BLM point of diversion downstream to the mouth of the John Day River.

**c. State and Federal Recommended Flows**

The Oregon Supreme Court ruled in 1988, that before authorizing any new diversion of water from or above a State Scenic Waterway, or from a tributary to it, the OWRC must find that the needs of the State Scenic Waterways are met. The OWRD identified minimum flows necessary to maintain river values in the John Day River State Scenic Waterway (OWRD 1990) (Table 5). For example, the OWRD found that a minimum of 1,000 cfs is needed for rafting and drift boating, and a minimum of 500 cfs is needed for canoes, kayaks, and other small water craft. These minimum flows are referred to as the “Diack” flows. Table 5 quantifies natural flow at 50% and 80% exceedence and total consumptive use and storage for the various designated State Scenic Waterway segments. Net flow at the exceedence levels quantifies resultant river flows after consumptive uses and storage are subtracted. The scenic flow represents the minimum waters level in the river for recreational uses, fish flows, optimum and minimum quantify flows needed for anadromous fish species in the river. Instream flow rights are also quantified and represents water for which there is a valid water right that has been designated for instream use. Table 5 shows that in all segments recommended minimal and optimal instream flow for anadromous fish, as described by Lauman (1977), are not met during the critical summer time period; however, this is consistent with observations that in the lower river (below Service Creek) anadromous fish and resident salmonids are not highly concentrated in the summer season.

The “right” of the federal government to John Day River water was established in 1988 when segments of the river were designated Wild and Scenic by the US Congress. In this case, the managing federal agencies were granted title to the water necessary to maintain the purposes for which the river segments were designated. The priority date of these right becomes the date of the particular WSR designation. The purpose of these federal water rights is similar to the state Diack flows, in that they are necessary to protect the outstanding, remarkable or significant values identified in the legislation designating a WSR. These federal flow rights have not been quantified and due to their priority date will not likely be realized. The Diack flows for the State Scenic Waterway are taken to be sufficient to protect and enhance the ORV’s in the WSR corridor.

Table 5. Monthly natural stream flow estimates, consumptive use estimates, net stream flow estimates, and State Scenic Waterway Flow values (OWRD); recommended minimal and optimal i anadromous fish; and instream water rights at or near John Day River (RM 21 and RM 156.5), South Fork John Day River (RM 0.0), and North Fork John Day River (RM 0.0). (all figures repr											
Stream	Category	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct

John Day River	Natural (50%)	1250	2440	3250	4860	5050	2700	715	340	271	380
River Mile 21	Natural (80%)	626	1050	1680	2920	3020	1440	470	246	194	283
McDonald Ferry	C.U. & Storage	16.7	23.9	32.8	157.6	321.4	292.8	265.6	192.6	128.5	51.6
	Net. Flow (50%)	1233	2416	3217	4702	4729	2407	449	147	142	328
	Net. Flow (80%)	609	1026	1647	2762	2699	1147	204	53	65	231
	Scenic Flow	500	1000	2000	2000	2000	2000 ~ 1000	500	500	500	500
	Fish Flow (opt.)	500	500	500	500	500	500	500	500	500	500
	Fish Flow (min.)	390	390	390	390	390	390	390	390	390	390
	Instream	20	20	20	20	20	20	20	20	20	20
	Right										
John Day River	Natural (50%)	1130	2060	2860	4610	4770	2410	652	312	260	385
River Mile 156.5	Natural (80%)	556	953	1506	2710	2860	1270	420	242	203	280
Service Creek	C.U. & Storage	12.5	16.5	25.8	100.5	192.2	189.6	230.3	176.3	119.3	50.1
	Net. Flow (50%)	1118	2043	2834	4510	4578	2220	422	136	141	335
	Net. Flow (80%)	544	936	1480	2610	2668	1080	190	66	84	230
	Scenic Flow	500	1000	2000	2000	2000	2000 ~ 1000	500	500	500	500
	Fish Flow (opt.)	500	500	500	500	500	500	500	500	500	500
	Fish Flow (min.)	390	390	390	390	390	390	390	390	390	390
	Instream	30	30	30	30	30	30	30	30	30	30
	Right										
John Day River	Natural (50%)	649	1240	1820	3170	3500	1650	353	159	141	169
North Fork	Natural (80%)	293	523	952	1830	2130	813	215	120	109	127
River Mile 0.0	C.U. & Storage	4.0	4.8	9.4	36.1	72.2	52.5	60.9	46.9	31.9	13.9
	Net. Flow (50%)	645	1235	1811	3134	3428	1597	292	112	109	155
	Net. Flow (80%)	289	518	943	1794	2058	760	154	73	77	113
	Scenic Flow	380	380 ~ 600	1300	1300	1300	800	235	235	235	235
	Fish Flow (opt.)	380	380 ~ 600	600	600	600	380	235	235	235	235
	Fish Flow (min.)	235	235 ~ 380	380	380	380	235	175	175	175	175
	Instream	55	55	55	55	55	55	55	55	55	55
	Right										
	Instream	235	235 ~ 380	380	380	380	235	175	157	140	168
	Right										
John Day River	Natural (50%)	110	177	245	358	267	147	42.6	31.9	29.1	38.3
South Fork	Natural (80%)	53	84	132	197	146	72.8	24.1	18.8	18.1	31.6
River Mile 0.0	C.U. & Storage	0.5	0.6	0.6	3.9	7.8	10.1	14.6	11.4	7.7	3.1
	Net. Flow (50%)	53	83	131	193	138	63	10	7	10	28
	Net. Flow (80%)	110	176	244	354	259	137	28	21	21	35
	Scenic Flow	133	133 ~ 225	225	225	225	133	90	90	90	90
	Fish Flow (opt.)	133	133 ~ 225	225	225	225	133	90	90	90	90
	Fish Flow (min.)	100	100 ~ 133	133	133	133	100	50 ~ 25	25	25	25
	Instream	100	100 ~ 133	133	133	133	100	50 ~ 25	25	25	25
	Right										

Source: Lauman (1977)





The John Day River system provides habitat for a variety of native and non-native fish populations, including five special status species (Table 6 and 7). Special status fish species in the John Day River basin are Mid-Columbia steelhead (Threatened), bull trout (Threatened), interior redband trout, westslope cutthroat trout, and Pacific lamprey (Sensitive). Information on population trends and distribution has focused primarily on anadromous salmonids, and to a lesser extent on resident salmonids and warm water game species. Native, non-game species have received less attention. However, it is presumed that activities designed to benefit anadromous and resident salmonids will be advantageous to these species that evolved under similar environmental conditions.

Efforts to correct fish habitat degradation and promote restoration have proceeded for the past several years in response to concerns about declining fish populations. Recent planning efforts directed through the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program generated the Columbia Basin System Planning Salmon and Steelhead Production Plan-John Day River Sub-Basin (ODFW 1990). The John Day River Subbasin Plan and the Columbia River Anadromous Fish Restoration Plan (CRITFC 1996) established spring chinook salmon and summer steelhead production goals and objectives for the John Day subbasin (see Table 8). Under the Wild Fish Management Policy (OAR 635-07-525), spring chinook salmon and summer steelhead are managed exclusively for wild fish production (ODFW 1990). An amendment to the Columbia River Basin Fish and Wildlife Program, known as Strategy for Salmon (Collette and Harrison 1992), called on resource management entities to implement measures designed to rebuild Columbia Basin anadromous fish populations. Subsequent to the Strategy for Salmon, the BLM adopted PACFISH (USDA-FS and USDI-BLM 1995), which was designed to halt the degradation and promote restoration of riparian areas. Parallel efforts among private landowners in the John Day basin have made progress in restoring watersheds and fish habitat. Pacific lamprey and a small run of fall chinook salmon also inhabit the John Day River. Although much less is known of these runs, restoration efforts designed to protect and restore habitat for spring chinook salmon and summer steelhead will benefit these anadromous species, as well as native resident species in the John Day River system.

Table 6. Fish Species Occurring in the John Day System		
Common Name of Species	Scientific Name of Species	Origin
Chinook salmon	<i>Oncorhynchus tshawytscha</i>	Native
Rainbow trout (resident and anadromous)	<i>Oncorhynchus mykiss</i>	Native
West slope cutthroat trout	<i>Oncorhynchus clarki lewisi</i>	Native
Yellowstone cutthroat trout	<i>Oncorhynchus clarki bouvieri</i>	Introduced
Lahonton cutthroat trout	<i>Oncorhynchus clarki henshawi</i> <i>henshawi iiiiii</i>	Introduced
Mountain whitefish	<i>Prosopium williamsoni</i>	Native

Bull trout	Salvelinus confluentus	Native
Brook trout	Salvelinus fontinalis	Introduced
Paiute sculpin	Cottus beldingi	Native
Shorthead sculpin	Cottus confusus	Native
Bridgelip sucker	Catostomus columbianus	Native
Largescale sucker	Catostomus macrocheilus	Native
Mountain sucker	Catostomus platyrhynchus	Native
Carp	Cyprinus carpio	Introduced
Chiselmouth	Acrocheilus alutaceus	Native
Northern pikeminnow	Ptychocheilus oregonensis	Native
Longnose dace	Rhinichthys cataractae	Native
Speckled dace	Rhinichthys osculus	Native
Redside shiner	Richardsonius balteatus	Native
Peamouth	Mylocheilus caurinus	Native
Small mouth bass	Micropterus dolomieu	Introduced
Largemouth bass	Micropterus salmoides	Introduced
Bluegill	Lepomis macrochirus	Introduced
Black crappie	Pomoxis nigromaculatus	Introduced
Channel catfish	Ictalurus punctatus	Introduced
Brown bullhead	Ictalurus nebulosus	Introduced
Pacific lamprey	Lampetra tridentata	Native
Western brook lamprey	Lampetra richardsoni	Native
Source: ODFW (1989)		

Table 7. Periodicity of Steelhead and Chinook Salmon Life History in John Day River.

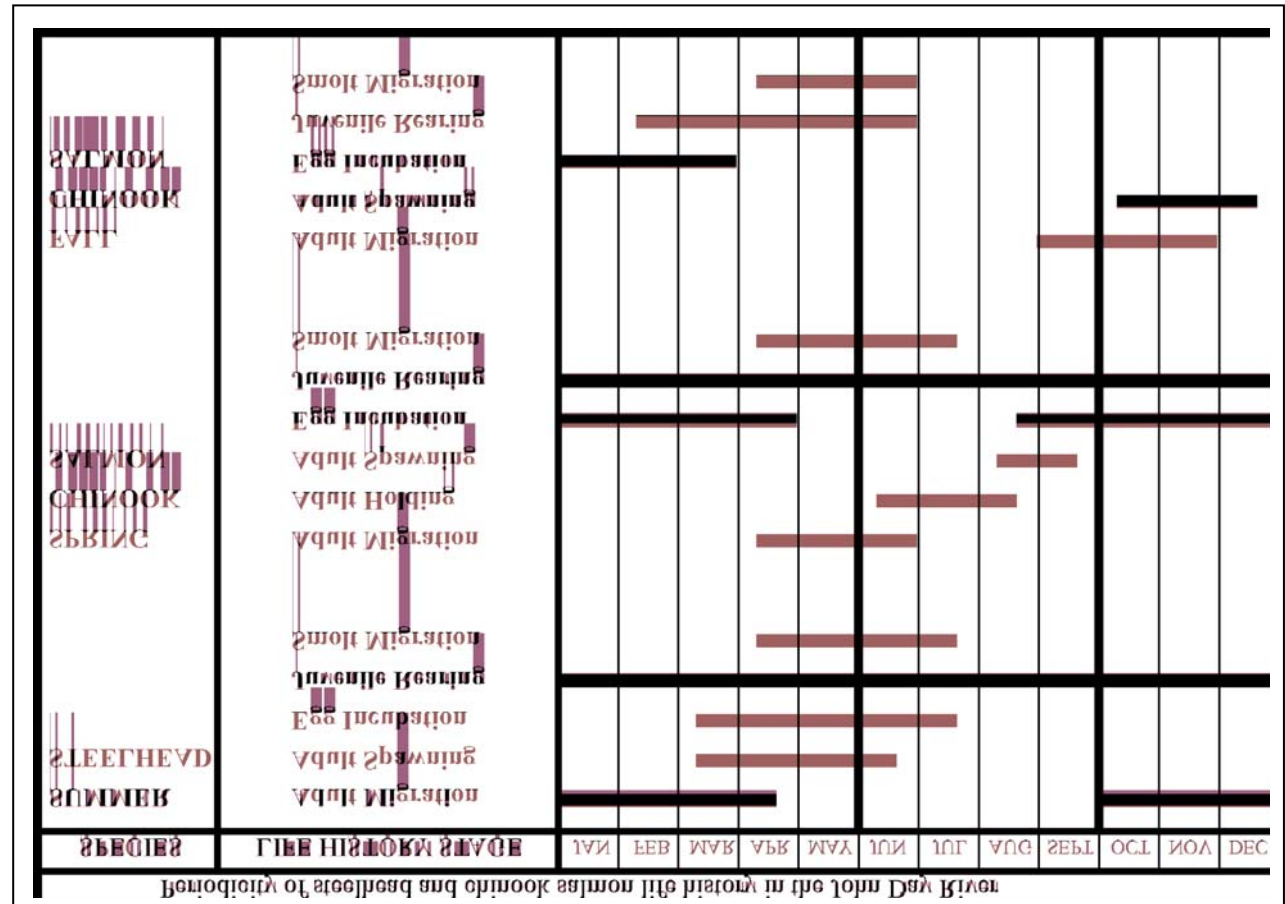


Table 8. Average Annual Production Goals for Spring Chinook Salmon and Summer Steelhead in John Day Basin				
Species	Sport and Tribal Harvest Estimate	Natural Reproduction Escapement Estimate	Total Escapement Goal	Average Escapement 1989-1998
Spring Chinook	1,050	5,950	7,000	2,310



Salmon				
Summer Steelhead	11,250	33,750	45,000	8,370
Source: ODFW (1990)				

The John Day River system supports one of the few remaining wild runs of spring chinook salmon (Lindsey et al. 1986, OWRD 1986, Quigley and Arbelbide 1997) and summer steelhead (Quigley and Arbelbide 1997, OWRD 1986) in the Columbia Basin, providing approximately 1,800 miles of spawning habitat for summer steelhead and 117 miles for spring chinook (ODFW 1997). Table 7 illustrates when and how the river is used by salmon and steelhead.

Summer steelhead spawning areas on public lands cover much of the basin. Some streams with documented spawning include tributaries of the upper mainstem John Day River (Dixie, Standard, Indian, Canyon, and Cottonwood Creeks), the South Fork John Day River (Deer and Murderers Creeks), the North Fork John Day River (Rudio Creek), and the Lower John Day River (Bridge, Bear, Gable, Ferry Canyon, Little Ferry Canyon, Pine Hollow, Long Hollow, and Jackknife Canyon).

Habitat and riparian conditions of the mainstem John Day River, its forks and its tributaries are in various stages of recovery and trends for all life stages of summer steelhead. Fish habitat condition, and trend surveys were conducted by the BLM in 1980-81 on most perennial and fish bearing streams in the basin. Some surveys were repeated in 1989-1990.

The lower (RM 0 to RM 109) and middle (RM 109 to RM 212) subbasins (Segments 1 through 4) function primarily as a migration corridor for anadromous salmonids. This portion of the basin accounts for an estimated 7% of the steelhead production in the John Day basin and a small run of fall chinook salmon (OWRD 1986). The upper mainstem John Day River subbasin (RM 212 to headwaters) produces an estimated 18% of the spring chinook salmon and 16% of the summer steelhead in the John Day basin (OWRD 1986). Increasing population trends of spring chinook salmon are indicated for the upper mainstem John Day River subbasin. These trends are attributed to management and restoration efforts implemented over the last few decades (ODFW 1997). The South Fork subbasin (Segments 10 and 11) produces approximately 7% of the summer steelhead population in the John Day basin (OWRD 1986). The North Fork and Middle Fork subbasins (Segments 6 through 9) produce approximately 82% of the spring chinook salmon and 70% of the summer steelhead population in the John Day basin (OWRD 1986). There has been no sport fishing of spring chinook salmon since 1977, and steelhead have been limited to the catch-and-release of “wild” fish from 1996 to the present. Steelhead production takes place in the tributaries and headwaters of the river, mostly outside the river corridor.

Several species of resident salmonids inhabit the John Day River system. Redband and rainbow trout occur throughout the John Day River system. The primary habitat is found in the upper subbasins and tributaries. Hatchery supplementation with rainbow trout has occurred in the past, but the ODFW no longer releases hatchery fish in streams associated with the John Day River. Two subspecies of

cutthroat trout, Yellowstone and westslope, are found in tributary streams of the upper John Day River. Yellowstone cutthroat trout were introduced in the 1900s and have not been stocked since (ODFW 1989). The Westslope cutthroat trout is native to the North Fork and upper mainstem John Day River. The current distribution of these species is confined to headwater tributaries in the upper mainstem and North Fork subbasins (Duff 1996). Bull trout occupy habitat in the upper mainstem John Day subbasin, North Fork subbasin, and Middle Fork subbasin. The primary habitat occurs upstream of Camas Creek in the North Fork subbasin, upstream of Big Creek in the Middle Fork subbasin, and upstream of Canyon Creek in the upper mainstem John Day River subbasin (ODFW 1996). Winter distribution in the North Fork includes Segments 6 and 7, downstream to Wall Creek, with one documented sighting as far downstream as Rudio Creek in 1999 (ODFW 1999).

The John Day River also supports an increasingly popular warm water sport fishery. A review of habitat requirements revealed the river exhibits good conditions for both smallmouth bass and channel catfish. Upon assurance that warm water predation on salmonids would be minimal, these species were introduced into the John Day River in the early 1970s (ODFW 1999). Smallmouth bass are distributed throughout the mainstem, from Tumwater Falls to Picture Gorge (Segments 1,2, 3, and the lower portion of Segment 4) and in the North Fork from Kimberly to Wall Creek (RM 0 to RM 22, lower portion of Segment 6). Diet studies support the theory that smallmouth bass in the John Day River are not feeding on migrating salmonids (ODFW 1999). Smallmouth bass have successfully filled a niche in the John Day River, which has developed into a nationally recognized sport fishery.

## **6. Vegetation**

A useful way of discussing vegetation is by examining plant communities similarly affected by landscape and climate (Oosting 1956). These classifiable plant communities are referred to as ecological sites. Ecological sites are grouped according to specific physical characteristics that differ from other kinds of land in the ability to produce a distinctive kind and amount of vegetation (such as potential vegetation). Potential vegetation is a function of soil, parent material, relief, climate, flow regime (for riparian communities), biota (animals), and time (time for the biotic community to approximate a dynamic equilibrium with soil and climate conditions) (USDA NRCS 1997). Ecological sites along the John Day River can be broadly categorized into four basic divisions according to the topographic position which they occupy: riparian, riverine terrace, upland, and forest-woodland.

### **a. Riparian**

The riparian zone is the area that normally receives some degree of inundation (or saturated soil conditions) during the growing season (for more information refer to U.S. Army Corps of Engineers 1987 and USDI-BLM 1993). In most of the John Day River, the majority of the riparian zone is flooded during part of the growing season and dry during mid to late summer. There are several riparian ecological sites that have distinct potential plant communities. Some of these sites have potential for dense riparian plant communities. In areas where the soils are not developed enough to moderate the annual wet-

dry cycle, vegetation is either lacking completely or restricted above the normal high water line to plants such as service berry, hackberry, mock orange and various annual and perennial grasses and forbs. The areas where soils are developed and well-drained have more shrubs that are traditionally considered riparian, such as willow, cottonwood and alder. Where water flow is slow or where saturated soil conditions last longer into the growing season, sedges and rushes occupy more of the plant composition.

The BLM currently uses several techniques for monitoring riparian conditions on the John Day River. One technique is the BLM Proper Functioning Condition (PFC) ratings, which have been done by a BLM interdisciplinary team for most river segments (see PFC ratings in individual river segment descriptions later in the chapter). An inventory of willow communities along the river in Segments 2 and 3 was completed in 1981 and 1995 (USDI-BLM 1996a). Willow communities expanded from unmeasurable in 1981, to 15.56 river bank miles (35.84 acres) in 1995. Photopoint monitoring occurs at 51 randomly selected sites along river Segments 1, 2, 3, 10 and 11. Photos are taken at 1 to 5 year intervals. Results of this monitoring show variations, depending on site potential and water flow; however, where riparian-oriented management has been implemented, vegetative structure, density and diversity have increased. In 1990, prior to implementation of most riparian-oriented management, an additional 329 photopoints were established at 1/4 mile intervals along public land portions of the river.

#### **b. Riverine Terrace**

Riverine terraces are formed from abandoned floodplains. When the John Day River channel eroded, the water table dropped and the floodplain soils drained. Due to lack of subsurface water, vegetation on the abandoned floodplain changed to more xeric plants, such as sage brush and annual grasses. Leopold and Vita-Finzi (1998) documented riverine terraces of similar ages throughout broad geographic areas and correlated them with climate cycles. Depositional periods were wet, or were periods of small rainfall events. Erosional periods were either dry or periods of large, infrequent storms. Two and, in many cases, three such deposition and erosion cycles are represented by remnant terraces in stream and river valleys throughout the semi-arid western United States. The latest erosional event (since about 1860) could have been intensified by land use activities that increased the susceptibility of the basin to erosion, disrupting the hydrological function of the watershed. The period of adjustment that follows channel downcutting includes widening and development of a new floodplain within the confines of the eroded channel.

The riverine terrace includes the primary terrace immediately adjacent to the river, as well as any secondary or tertiary terraces above. Depending on the subsurface water regime, the zone is more or less a transition between riparian and upland vegetation. The vegetation on these (typically) deeper soils is sagebrush, annual grasses, Great Basin wild rye, a mix of perennial bunchgrass and forb species, and western juniper.

### **c. Upland**

The upland zone is often characterized by steep slopes with shallow soils on ridges, south and west-facing slopes, and deeper well-drained soils on the north and east-facing slopes. The upper layer of soil is sometimes bound by a biological soil crust consisting of algae, fungi, mosses and lichens. Plant communities may include scattered junipers and low shrubs, such as sagebrush and snakeweed, with an herbaceous layer of cheatgrass and cold season grasses including bluebunch wheatgrass and Idaho fescue.

Formal inventories of the upland vegetation were completed in 1974 (range surveys) and 1982 (ecological site inventories) on BLM lands. The range surveys determined the amount of harvestable forage, and the ecological site inventories determined the condition class of vegetation (see discussion below). Monitoring includes photopoints and species composition measurements using such sampling techniques as line intercept, Daubenmire and nested frequency. There are 117 monitoring sites in pastures that are partially within the WSR boundaries. Results show variations, depending on site potential and climate; overall, where management has been applied, conditions have improved.

### **d. Forests and Woodland**

Higher elevational sites have greater effective precipitation and cooler temperatures. These factors, combined with parent material, slope, and time can produce deeper soils which, in turn, may allow for the growth of larger trees. Half of the basin's uplands are forested. On the southerly aspects, there are ponderosa pine-mountain mahogany/elk sedge-Idaho fescue communities. Steep north-facing slopes support Douglas fir/elk sedge communities. Western juniper occur throughout these communities (USDI-BLM 1991).

### **e. Ecological Condition and Trend**

The condition of vegetative communities of the John Day River has been improving due to the efforts of private landowners in cooperation with local, tribal, state, and federal agencies. Vegetative condition refers to the similarity of a site with an “undisturbed” ideal. Vegetation condition and trend is a concept created out of succession concepts pioneered by Clements near the turn of the century and elaborated on by others (Smith 1989). The model predicted that all effects of abusive grazing or drought (changes in the vegetative community away from the undisturbed ideal, stable state or climax) could be reversed by reduced grazing or increased precipitation (Westoby et al. 1989). In spite of these concepts being challenged at first by plant ecologists, range managers have, until recently, ignored the controversy (Smith 1989). A second concept on plant succession, called “multiple stable states” or “state and transition” model, has recently gained acceptance (Quigley and Arbelbide 1997). This model recognizes that a site may be capable of supporting numerous stable vegetative

communities. This new model recognizes relatively stable groups of species that change after a threshold of tolerance has been exceeded (Laycock 1991, Friedel 1991). The results of this change persist, in spite of removal of the forces which caused the change. For example, in a stable sagebrush-bunchgrass community where heavy livestock grazing has occurred for many years, the bunchgrass component may have been removed, thereby allowing sagebrush to occupy the vacated site (Laycock 1991). This produces a new stable state dominated by sagebrush. Although livestock may be completely removed, the community will remain in this new stable state.

So far, the “state and transition” model is assumed to be the most accurate model for arid and semi-arid ecosystems. Where water is less limiting, the Clementsian model is thought to be the more accurate representation (Quigley and Arbelbide 1997). Inventory, monitoring and research techniques vary depending on the model assumed to be operable (Westoby et al. 1989). Data interpretation also varies widely, depending on the model used as the underlying concept of ecosystem processes. For example, in the past, climax was thought to be the most productive state and early seral the least productive. Recent studies have shown little or no correlation between production and seral state (Tiedeman et al. 1991, Frost and Smith 1991). Climax was thought to provide the best wildlife habitat, but wildlife are more likely to respond to stand structure than to species composition (Smith 1989). The lower John Day basin range conditions and trends were inventoried in the late 1970s and early 1980s, at a time when the “state and transition” model was not a recognized model. In interpreting the data, it is important to remember that a “low seral” ecological status does not imply that there are necessarily opportunities for improvement to “mid seral” or “high seral” status through changes in grazing management alone (Friedel 1991).

Riparian areas are one example of where the Clementsian model is still thought to be operable (Quigley and Arbelbide 1997). The BLM technical reference 1737-7 (USDI-BLM 1992a) describes the procedure for inventorying riparian conditions. So far, in the John Day basin, seven different site types have been identified: basalt ledge/cliff, colluvium, cobble/gravel bar, terrace edge, non-riparian terrace, alluvial fan, and hill slope. Potential vegetation communities vary not only with each site type, but also with topographic position within a site type (that is, whether the plant community is covered by water at river flows of 15,000 cfs, 2000 cfs, or 200 cfs). For example, basalt cliffs do not produce the same vegetation communities as areas of alluvial fan. Similarly, sites with free water in August, but covered by 5 feet of water in April, support a different vegetative community than sites with free water in April and dry soils in August. The rates of successional change could vary within and between site types as well. With respect to river management, resource objectives and monitoring standards must take into account the differences in site potentials.

The increase in the amount of woody riparian vegetation along the river (see USDI-BLM 1996a) indicate vegetation is increasing in density and diversity on sites with potential to support vegetative communities. The plant communities along the John Day River express a broad range of potentials, ranging from sagebrush flats to ponderosa pine forests, from basalt cliffs adorned with toe-holds of moss and monkey flowers, to riparian soils with willow and alder thickets. Some areas within the

river flood plain have conditions that inhibit development of plant communities. Examples are gravel bars, which can wash away and reform several times a year, depending on flooding patterns; and ice flows that can shear off established woody plants at ground level. Where management has been implemented that meets the physiological needs of plants, vegetative communities are coming into balance with the potential of the site.

## **7. Special Status Species**

The John Day River basin supports several special status plants normally associated with a specific, limited habitat. These special status plants contributed to the finding that botanical values are an outstandingly remarkable value of the South Fork. A Bureau Sensitive species, South Fork John Day milkvetch is found in Segment 10 and is suspected to occur in Segment 11 (the South Fork). Another Bureau Sensitive species, arrowleaf thelypody, is found within Segments 3, 4 and 6 and is suspected to occur in Segments 10 and 11. Columbia cress, another Bureau Sensitive species, has not been found on the John Day River, but is suspected to occur along the entire river since one of its known habitats is river gravels subjected to ephemeral flooding.

Hepatic monkeyflower is a Bureau Sensitive species found on moist rock walls in Segment 2 and is suspected to occur anywhere there are moist cliffs, particularly on the lower river. Lawrence's milkvetch is a Bureau Sensitive species found east of the Prineville District, but is suspected to occur within the basin. Porcupine sedge is an Assessment Species that has been found within the basin, but not within the WSR corridor. Another Assessment Species, Torrey's rush, is found in Segments 2 and 3 and is suspected to occur along the entire river.

## **8. Noxious Weeds**

"Noxious" is a legal classification rather than an ecological term. Plants that can exert substantial negative environmental or economic impact can be designated as noxious by various government agencies. The single greatest threat to the native rangeland biodiversity and recovery of less than healthy rangelands and watersheds is the rapidly expanding invasion of noxious weeds (Asher 1993). Both forestland and rangeland are being invaded by noxious weeds at an accelerating rate, consumptive and non-consumptive uses, including livestock grazing, timber production, and wildlife and scenery viewing. Noxious weeds reduce these uses by displacing native plant species and lessening natural biological diversity; degrading soil integrity, nutrient cycling, and energy flow; and interfering with site-recovery mechanisms, such as seed banks, that allow a site to recover following disturbance (Quigley and Arbelbide 1997).

The weeds causing the most concern in the John Day River basin are diffuse, spotted and Russian knapweeds; Dalmatian toadflax; yellow starthistle; Scotch thistle; purple loosestrife; rush skeletonweed; leafy spurge; poison hemlock; and medusahead rye. Weeds of special concern are those beginning to occupy very small niches with just a few plants along the high water line, and small patches on

islands (mainly diffuse knapweed and dalmatian toadflax) that could spread very rapidly. Also, small infestations of Russian knapweed and dalmatian toadflax are becoming more prevalent on the upper, sheltered alluvial flats. This is especially noted on almost all riparian zones below the confluence of Thirtymile Canyon at RM 84, but a few plants of purple loosestrife and rush skeletonweed have also been found and hand pulled. In the Clarno area, medusahead rye is very prevalent on the west side of the river to the north and south of Highway 219, in the fairly recent burn areas. It is also prevalent in the Murderer's Creek drainage, a tributary of the South Fork of the John Day River. Diffuse knapweed is found along the road right-of-way, south of Clarno. Russian knapweed is also very prevalent in the Clarno and Bridge Creek areas, and has also been found in many very small patches along the river almost always on the upper alluvial flats. Dalmatian toadflax is also found on these flats and is beginning to move up slopes in a few spots, especially below Thirtymile Canyon. The thistles (Scotch, bull and Canada) and poison hemlock are found most commonly at the small tributaries near and in riparian areas. Yellow starthistle has been found in several locations in the Clarno area and is especially prevalent in the upper Bridge Creek area near Mitchell. It is also prevalent around the Columbia River near Biggs and the Horn Butte ACEC, an area north and east of the John Day/Columbia River confluence. Leafy spurge is found in Grant County in the upper watersheds (Fox Valley and Cottonwood Creek) of the North Fork of the John Day. Four sites were found and treated in 1995, and 18 sites were found and treated between Monument and Spray in 1996. A very serious threat is noted in the recent increase of perennial pepperweed in the Bridge Creek drainage.

Federal Executive Orders (EO 13112) and state laws require certain actions be directed at managing noxious weeds. In large part, the "invasion of alien plants into natural areas" and the crowding" out of native flora and fauna has been stealthy and silent, and thus, largely ignored" (Cheater 1992).

## **9. Agriculture**

Agriculture has been and continues to be one of the most significant land uses in the basin. Hay is the most common crop in the upper basin. Hay fields are located very near the river where they usually are irrigated with John Day River water. Wheat, the most common commercial crop in the lower basin, is not irrigated. Hay is still grown along the river in the lower basin, but the number of acres devoted to hay are minor compared to the number of acres of wheat grown on the plateaus near the John Day River.

The John Day basin contains approximately 60,103 acres of irrigated land and 477,682 acres of non-irrigated agricultural land, 1.2% and 9.2% of the basin respectively (OWRD 1986)(Table 9). The majority of the irrigated acres occurs along alluvial bottom lands in the southern portion of the basin for hay production, whereas the northern part of the basin is dominated by non-irrigated grain production on the plateaus. Consumptive use varies among crops and with seasonal precipitation (Table 10). Surface and subsurface return flow are additional factors in determining the amount of water removed from the John Day River for irrigation.

**Table 9. Irrigated And Non-Irrigated Agriculture In Counties of the John Day Basin**

County	Acres Used for Agriculture	
	Irrigated	Non-irrigated
Crook		45
Gilliam	3,476	251,034
Grant	40,277	14,480
Jefferson	194	607
Morrow	2,940	16,741
Sherman	428	165,899
Umatilla	trace	765
Wasco	823	3,298
Wheeler	11,965	24,813
<b>Total</b>	<b>60,103</b>	<b>477,682</b>
Source: OWRD 1986		

**Table 10. Estimated Water Use For Three Major Spring Crops <sup>1</sup>**

Crop	Estimated Days of Water Use Per Month					
	April	May	June	July	Aug.	Sept.
<b>Grain</b>	<b>0.0</b>	<b>4.0</b>	<b>12.6</b>	<b>5.7</b>	<b>0.0</b>	<b>0.0</b>
<b>Alfalfa</b>	<b>0.0</b>	<b>2.7</b>	<b>11.3</b>	<b>17.1</b>	<b>13.9</b>	<b>6.7</b>
<b>Beans</b>	<b>0.0</b>	<b>0.0</b>	<b>4.0</b>	<b>16.3</b>	<b>12.1</b>	<b>0.0</b>

<sup>1</sup>Based on a maximum irrigation rate of 1/40 cfs per acre, for subject three crops, during irrigation season (4/1 - 9/30) and crop irrigation demand.

The method of water application on irrigated agriculture land in the John Day basin varies. In 1984, Oregon State University Extension Economic Information Office summarized irrigation methods with respect to total number of acres (Table 11).

**Table 11. Irrigation Methods and Acres Irrigated in the John Day**



<b>Basin</b>	
<b>Irrigation Method</b>	<b>Acres Irrigated By Method</b>
Big Gun	800
Center Pivot	299
Drip	30
Gravity Flood	39,075
Hand Line	5,950
Solid Set	450
Wheel Line	13,163
<b>Total</b>	<b>59,767</b>
Source: OWRD 1986	

#### **a. BLM-Managed Agricultural Land**

The BLM manages about 700 acres (1%) of the irrigated land and associated water rights within Segments 1, 2, 3 and 4, and is potentially responsible for approximately 0.8% of the total irrigation use in the basin (OWRD 1986). Of the 700 acres, approximately 385 acres (0.6% of the total irrigated agriculture land in the basin) are within the John Day WSR and account for 0.5% of the total irrigation use in the basin. In the late 1970s, the BLM began a nationwide effort to identify historical, but unauthorized, agricultural use on BLM-administered lands occurring from absence of accurate surveys and to manage that use under agricultural leases. There are four sites along the river where public land is a small part of a larger, privately owned field. These fields were developed as part of a private enterprise before land ownership boundaries were clearly identified.

The BLM agricultural lands were acquired through land exchanges, a foreclosed estate that reverted back to the federal government, and historical but unauthorized agricultural use. Approximately 164 acres are managed as non-commodity production and are currently used to grow wildlife food and cover crops or native hardwoods for transplanting along the river, or they have active weed management programs to control noxious weeds. Approximately 221 acres are leased for commodity production and are used to grow crops such as grain, alfalfa, or specialty seed crops such as onion, carrot, coriander or beans. Most fields have buffer/filter strips between the crop and the river. Buffer/filter strips are being pursued on the remaining fields that currently do not have these buffers.

In addition to the 164 acres of non-commodity agriculture land with water rights within the WSR corridor, there are approximately another 145 acres outside the WSR corridor. These lands currently have an active weed management program and are planted with wildlife food and cover crops, or native hardwoods and shrub propagation. Rehabilitation of these fields has resulted in a backlog of work for the BLM.

The BLM also has several upland agricultural leases. With one exception at river mile 86 on the east side of the river, the agriculture leases are located outside of the river corridor and are typically operated in conjunction with dryland farming on fields with which they have been historically adjoined.

## **10. Grazing**

### **a. Background**

Congress passed the Taylor Grazing Act in June 1934. This Act established the basic legislative authority governing management and protection of vacant public lands of the United States. The Taylor Grazing Act made a distinction between public lands contained within a grazing district (referred to as Section 3 lands) and those "so situated as not to justify their inclusion in any grazing district" (referred to as Section 15 lands). Public lands consisting of mostly scattered tracts fell into this second group. All of the public lands in the John Day basin were Section 15 lands.

Lands administered under Section 15 of the Taylor Grazing Act were leased by the acre prior to 1969. Following publication of new regulations, a conversion was made to leasing on an AUM basis. The number of AUMs available was determined by range surveys completed between 1967 and 1974 in the John Day River basin. These surveys established the grazing use levels that continue to be authorized today. Several of these surveys were contested when they appeared in the mid-1970s, because they substantially decreased authorized use. For example, in Gilliam County, AUMs on allotment #2597 were reduced from 621 to 183, or 71% (IBLA 75-36). On allotment #2512 in Jefferson County, AUMs were reduced from 2,684 to 635, or 76%.

The Natural Resources Defense Council sued the BLM in Washington D.C. in 1973, alleging that the BLM broad-scale "programmatic" grazing Environmental Impact Statements (EIS) did not comply with the requirements of the National Environmental Policy Act (NEPA). As a result of the law suit, the BLM agreed to prepare site-specific grazing EISs. In response, the BLM Prineville District completed an Ecological Site Inventory of the public lands in the lower John Day River basin in 1982. This inventory identified ecological sites, delineated geographical areas across the basin on the basis of these ecological sites, and assessed the ecological condition of the geographical areas with respect to what was believed to be their potential (see explanation of ecological sites, condition and trend under "Vegetation" in this chapter).

Prior to issuance of Records of Decision for the Two Rivers Resource Management Plan (RMP) (USDI-BLM 1986a) and the John Day Resource Management Plan (USDI-BLM 1985), almost all Section 15 lands were managed by the BLM as “custodial” grazing allotments. Custodial means that BLM collected grazing fees for the use of these lands, but grazing management was left to the livestock operators. Enforcement of the use levels or seasons of use dates specified in the lease was done only in unusual cases. The two RMPs prescribed monitoring, evaluation, and planning efforts to improve resource conditions in these scattered tracts. The RMPs also prescribed priorities based on the presence of sensitive public resources, rating grazing allotments as “improve” (I), “maintain” (M) or “custodial” (C). Most of the range monitoring studies available in the basin were installed after 1986.

The Northwest Power Planning Council completed the Strategy for Salmon (Collette and Harrison 1992) to outline and guide salmon recovery efforts in the Northwest. In response to this strategy, BLM placed emphasis on completing allotment evaluations and adjusting grazing management for all grazing allotments in the John Day basin that would affect anadromous fisheries habitat. Priority was placed on grazing allotments containing substantial public land riparian areas, either on the John Day River or on important tributaries.

The Secretary of the Interior approved and began implementation of the Oregon/Washington Standards for Rangeland Health and Guidelines for Livestock Grazing Management (USDI-BLM 1997) in August 1997. These standards and guidelines are intended to form the basis for all livestock grazing management occurring on all BLM-administered lands. They provide specific goals to be addressed in grazing permits and leases, and identify an array of indicators to consider in designing monitoring plans used to track progress in achieving standards.

### **b. Current Situation**

There are 52 grazing allotments partially within the mainstem John Day WSR corridor, and 12 grazing allotments partially within the South Fork John Day WSR corridor. Few pastures and no allotments lie completely within the corridor.

The following occurred in the John Day River basin by June 1999:

- Allotment evaluations were conducted on 92 allotments within the basin, encompassing 91% of the public land river bank miles within the designated WSR segments.
- Grazing management adjustments occurred in cooperation with private landowners on 31 of the 64 grazing allotments in the WSR segments.

- Grazing management was in place for protecting and enhancing ORVs for 184.9 public land river bank miles (94%) in the WSR corridor.
- Planning processes were underway for protecting an additional 5.4 public land river bank miles (3%).
- Significant vegetative improvement is occurring on allotments where riparian-oriented grazing management was implemented. An inventory of willow communities was conducted on Segments 2 and 3 of the river in 1980 and 1995. The willow communities on those segments were not measurable in 1980. By 1995, there were 15.56 river bank miles of willow communities (USDI-BLM 1996a). Although much of the John Day River is not suitable for willow growth, further expansion of willow and other riparian plant communities is expected to occur with continued upland and riparian restoration throughout the basin.

A decision was issued in 1988 (John Day River Bighorn Sheep Reintroduction EA OR-050-7-38), which stated that conversion of cattle or horse permits to sheep permits would not be authorized on 22 allotments in Segment 2. This decision was necessary to reduce the possible transmission of disease from domestic sheep to bighorn sheep. There are no active domestic sheep or goat permits on BLM allotments in the Wild and Scenic Segments 1, 2, 3, 10 or 11.

## **11. Recreation**

Recreation has been determined to be an outstandingly remarkable value on all designated WSR segments of the John Day River because of the diversity and quality of recreation opportunities potentially available. Within the John Day River system, recreation opportunities differ by river segment due to variations in river flow, character, topography, and availability of public access. Popular recreation pursuits range from picnicking, fishing, and swimming, to 5-day float trips through thousand foot deep canyons, and to hunting for upland birds and big game on slopes and side canyons adjacent to the river. Based on reports from the public and Oregon State Police, the use of small jet boats has been increasing in the lower river to provide access to hunting and fishing. Public road access is available at several remote locations on the lower mainstem, but boating provides the primary mode of access to this portion of the river. Between Clarno and Cottonwood, where no public road access is available, boaters have the opportunity for a semi-primitive, unconfined recreation experience—a recreation opportunity that is becoming increasingly uncommon. When compared to the neighboring Deschutes River, the John Day has fewer recreation developments along the river and its major tributaries, fewer river users, and fewer and less difficult rapids to negotiate. Historically, recreational use of the John Day River has been low due to limited access. Few regulations have been imposed on recreationists. Recreation use of the river has increased dramatically in recent years, resulting in concern over how this use will be managed in the future.

The upper South Fork, lower North Fork, and upper mainstem John Day Rivers provide a more rural setting that includes more farms and ranches, cultivated fields, and pastures than the upper North Fork or lower Mainstem. In the more populated areas of the river system, the sights and sounds of humans are often evident and the interaction between users occurs with moderate frequency.

The most popular activities on the mainstem John Day River are boating and fishing for smallmouth bass and steelhead. The mainstem John Day River, from Kimberly to Tumwater Falls, offers some white water boating opportunities with numerous Class II rapids, four Class III rapids, and one Class IV rapid. Rafts, drift boats, canoes, and kayaks are the most popular watercraft used on the John Day River. Some motorized boat activity occurs on the lower mainstem. The mainstem John Day River, between Clarno and Tumwater Falls, is closed to motorized boats from May 1 to October 1, primarily because of flow regime in the river and conflicts between users (floaters vs. boaters), and the use of personal watercraft (jet-skis) is prohibited year-round upstream of Tumwater Falls by Oregon Administrative Rule (OAR) 250-021-0030.

Other popular activities include camping; hunting for chukar, pheasant, geese, ducks, and deer; and viewing fossils in the John Day Fossil Beds National Monument. Secondary activities associated with float boating, fishing, and hunting include relaxation, photography, wildlife viewing, swimming, hiking, and sightseeing. Upland hunting and camping usually require the use of four-wheel drive vehicles where access is available.

#### **a. Seasons of Use**

As described earlier in this chapter, the amount of water flow in the river system varies widely by season and year. The mainstem John Day River from Kimberly to Tumwater Falls can be floated during most of the year, but cold winters and very low late summer and fall flows discourage most boaters from floating the river during those times. Canoes, inflatable kayaks, and small rafts can be used during low water flows, but larger rafts and drift boats can be used only during the high water season, which is usually from February through mid-July. The main boating season downstream of Kimberly is from early May to mid-July, with weekends between Memorial Day and Fourth of July receiving the highest use. Boaters with the equipment and experience necessary to navigate low water levels float the river to access hunting and fishing in August, September and early October.

Motorized boats are used upstream from Clarno from March through July, and downstream of Clarno in March and April for access to fishing. Motorized use occurs in both areas in October for fishing and hunting access. Motorized boats are used between McDonald Ferry and Tumwater Falls from October through December to access steelhead fishing and hunting for upland birds and deer. Lower flows do not appear to affect motorized use, because boaters familiar with the river can maneuver a jet boat at flows below 1,000 cfs. Boaters with outboard motors can operate at low flows by raising the motor up when passing through shallow water.

The North Fork John Day River provides a very short floating season, usually from April to mid-June, and sometimes shorter. The Middle Fork is floated occasionally; however, even in the spring, water levels are rarely sufficient for boating. Flows on the South Fork are not sufficient to support boating.

Fishing for smallmouth bass occurs primarily during the spring and summer on the mainstem up to Picture Gorge and the North Fork John Day River up to Wall Creek. Fishing for steelhead occurs throughout much of the basin from October through March. Bank fishing for trout occurs on the North, Middle and South Forks from May through October.

Hunting is popular throughout the basin. Hunting seasons are from late August to mid-January for waterfowl and upland birds, and from August through November for deer and elk.

Camping primarily occurs during the summer months, and in the spring and fall associated with boating, fishing, and hunting.

## **b. Commercial Use**

Guides and outfitters provide the opportunity for individuals without the necessary skill or equipment to enjoy the John Day River. Commercial use on the John Day River is regulated and monitored by the BLM through the issuance of a “Special Recreation Permit” to commercial operators. A guide or outfitter must meet application requirements, pay annual permit fees, and agree to follow permit stipulations. Float trips (typically guided fishing trips, but scenic and heritage trips are gaining in popularity) have been the primary commercial recreation use on the John Day River.

A moratorium was placed on issuing additional commercial guide and outfitter permits for the John Day River in 1996 for the duration of the planning process.

There were 34 permitted guides and outfitters at the time of the moratorium. Since then, 46 individuals have expressed interest in obtaining a new commercial guide and outfitter permit for the John Day River.

Outfitter and guide services offered may currently exceed public demand, based on the low number of user days reported by guides and outfitters. Most permitted guides and outfitters are not able to generate adequate income by operating solely on the John Day River. Their income from the John Day River is used to supplement other sources of income, including guiding and outfitting on other rivers or income derived from other businesses or employment.

An estimated 15 vehicle shuttle services are used by John Day River boaters. None are currently under BLM permit, although such services meet the definition of “commercial services” under BLM policy.

In addition to guided and outfitted services, the BLM has received inquiries from individuals interested in starting commercial vending (concessions) operations at BLM launch points to sell food, souvenirs, and boating equipment. Currently, no permits have been issued to operate concessions on BLM-administered lands within the John Day River basin.

## **c. Amounts of Use**

### **i. Visitation Estimates**

Visitors spend an estimated 100,000 visitor use days annually participating in recreation activities on BLM-administered land within the John Day River corridor.

An estimated 3,200 visitors spent approximately 4,800 visitor use days in 1998 at the four BLM developed campgrounds along the John Day River. This same year, car counters recorded 5,700 visits (estimated 14,300 visitor use days) at the Clarno Recreation Site and 14,700 visits (estimated 36,800 visitor use days) at Cottonwood Recreation Site. Travelers using these sites as roadside rest areas accounted for most of this use.

The BLM estimates approximately 5,500 boaters, accounting for 18,300 boater use days, floated the mainstem John Day River from Service Creek to McDonald Ferry during 1998. Approximately 41 of these boaters used motorized boats, accounting for 57 motorized use days. This data is based on information collected at boater registration stations, observations of BLM river personnel, and use reports submitted by commercial permittees. The number of boaters using motorized boats is likely higher, because boaters who attach electric or gasoline-powered outboard motors to driftboats or rafts may not note the specific use of a motor when registering. Use figures acquired before 1998 are less reliable, because boaters then were not required to register. Earlier use estimates were primarily based on BLM staff observations and data from car counters placed at key river access points. Preliminary review of 1999 boating use data indicates an estimated 10% overall increase in boating use levels.

Historically, the highest concentrations of boating use on the John Day River occurred on Memorial Day weekend. Detailed use data collected during Memorial Day weekend of 1989 accounted for 35 boating parties, totaling 312 people, that launched between Service Creek and Cottonwood Bridge over the three-day period. Data collected in subsequent years show that use on Memorial weekend remained nearly static (43 parties, totaling 309 people launched in 1998), but use increased on other weekends, both before and after Memorial Day. High water flows in 1997 and 1998 extended the normal floating season, and the Fourth of July weekend received heavy use. Launches were concentrated over eight weekends from Memorial Day weekend through mid-July in 1998, with the majority of launches occurring on Fridays and Saturdays.

Commercial guides and outfitters with permits from the BLM reported 2,647 commercial customer use days, and 968 guide or employee days in 1998. This was 19.7% of the total John Day River boating use during that year. Approximately 20% of the total permitted guides and outfitters reported 70% of the commercial use. Of the 34 permitted guides and outfitters, 11 reported either one or no trip with paying customers during 1998.

The Oregon Department of Fish and Wildlife (ODFW) estimated total angler visitor use days in 1987 to be about 12,000 for the North Fork John Day River, 3,000 for the South Fork and the Middle Fork combined, and 31,500 for the entire John Day River system. The same study estimated that there were 7,500 visitor use days for sightseeing, hiking, and photography and over 500 visitor days for swimming and other day-use activities in the river system. More recently, ODFW estimated angler visitor use days (by boat and bank) on the mainstem John Day River to be 9,600 in



1992 and 11,500 in 1993 for Service Creek to Tumwater Falls; and 14,250 in 1992 and 15,100 in 1993 for Kimberly to Service Creek.

The BLM estimates that hunting for chukars, grouse, other upland birds, geese, ducks, deer and elk within the John Day River corridor accounted for about 8,000 visitor use days in 1998.

## **ii. Length of Stay**

In 1998, the average length of stay on the John Day River was estimated to be 1.5 days for visitors at developed campgrounds and 2.7 days for boaters, based on sample observations and interviews. Actual length of stay varies with the type of activity and environmental factors (especially weather). For example, the length of stay for boaters is primarily determined by the number of river miles covered each day (which in turn is influenced by how fast the water is flowing). The length of stay for hunters usually exceeds five days, depending on the success of the hunt.

## **iii. Group Size**

Average group size for boaters on the John Day River over Memorial Day weekend in 1989 was 9 people, and for the same weekend in 1998 it was 7 people. Average group size for the 1993 season was 6.2 people and declined to 5.1 people in 1998. Commercial rafting group size varies from 2 to 16 people with an average of 7.4 people per group. The maximum group size between Service Creek and Tumwater Falls is 16 for both commercial and non-commercial groups. Boater registration data indicates that boating groups of 20 to 45 people are occasionally launching in violation of maximum group size rules. Bank anglers generally fish alone or in small groups of 2 or 3 persons. Data is not available for car camping or hunting group size.

## **iv. Origins of Use**

Boater registration data collected in 1998 found that 33% of trip leaders came from central Oregon; 64% from outside central Oregon but within the tri-state area of Oregon, Washington, and California; and 3% from other states.

#### **d. Public Access**

##### **i. Roads and Trails**

Public access to the river varies between paved highways and gravel roads that parallel the river, to bridged crossings over 50 river miles apart. The South Fork and middle mainstem John Day River have frequent and easy public access due to nearby public highways and numerous tracts of public land. Much of the North Fork is accessible by a more primitive gravel road and a public easement issued to ODFW. The lower mainstem and portions of the Middle Fork have infrequent and difficult public access due to lack of public roads and trails.

Private road access to the river that was historically open for public use is now being gated and locked in many areas, resulting in frustration for people who had grown accustomed to using the private roads. Some private landowners charge an access fee for public access to BLM-administered lands via private roads or trails. In addition, rural counties are abandoning some sections of county roads in an effort to save maintenance costs, leaving sections of road inaccessible to the public.

##### **ii. Boat Launching and Landing Sites**

Primary public boating access sites are at Monument, Muleshoe, Service Creek, Clarno, Cottonwood Bridge, and McDonald Ferry. Primitive, undeveloped launch sites are available on public land from a wooden bridge 2.5 miles upstream of the Muleshoe Recreation Site, between Twickenham and Cherry Creek; from a county road at Rock Creek; and on the North Fork near Camas Creek and at Monument. Other primitive launch sites are available, but most require permission from private landowners, and many require four-wheel drive vehicles for access.

#### **B. Baseline Conditions for the Lower John Day River Subbasin #17070204**

##### **1. Segment 1: Mainstem - Tumwater Falls to Cottonwood Bridge**

###### **a. Location and Characteristics**

This segment is the lowest in elevation of the John Day River. It lies between Tumwater Falls (RM 10) and Cottonwood bridge (RM 40), where State Highway 206 crosses the John Day River.

The lower subbasin, which includes this segment, drains an area of about 2,030 square miles. It is physiographically different from the upstream segments in that it generally lacks the mountainous terrain and high elevations that accumulate significant snow pack.

### **b. Water Quantity and Quality**

The lower subbasin, including this segment, can be characterized as an area that receives water, as opposed to one that produces it. Most tributary streams in the subbasin are nearly ephemeral, many ceasing to flow in summer (approximately July through September). There are three main tributaries to the lower mainstem: Rock Creek, Hay Creek, and Grass Valley Canyon. Rock Creek is the largest with a mean monthly flow ranging from 120 cfs in March to less than 1 cfs in September. Lone Rock Creek, a tributary to Rock Creek, stopped flowing at some time in at least 10 out of the 13 years between 1966 (first year of record) and 1978 (last year of published record). Generally, non-flow conditions last from August through September in these tributaries. In especially dry years, flows can stop as early as July and not resume until October.

The stream gauge at McDonald Ferry records discharge for over 95% of the John Day basin. It has been in operation since 1905 and provides an excellent record of stream flow variability. Discharge varies seasonally, from year to year, and from decade to decade (OWRD 1986). Peak discharge occurs between late March and early June, with 22% of runoff occurring in April and 21% in May. Low flows occur between July and November. The average monthly high flow is during April (5,710cfs). Minimum monthly low flow occurs during September (87 cfs); no flow occurred for part of September 2, 1966, August 15 to September 16, 1973, and August 13, 14 and 19 to 25, 1977.

Frequency of peak flows has changed. The number of flow events exceeding 6,900 cubic feet per second (cfs) (defined by the USGS as a peak flow for the gauge at McDonald Ferry) was greater from 1980 to 1985 than any other five-year period since 1948. The flows during the 1964 and 1997 floods of 40,200 and 35,200 cfs respectively, exceeded any other flows on record by 35 %. Changes in discharge may be caused by climatic variation or watershed alteration (OWRD 1986). The average annual discharge for the period of record is 1,524,000 acre feet. On some occasions, such as in 1966, 1973 and 1977, the river ceased to flow.

In 1996, the 29.5 miles of Segment 1 were included in the Oregon Department of Environmental Quality (ODEQ) 303(d) list of water quality limited streams as exceeding the state criteria of 64\_ F for summer water temperatures (ODEQ 1998). This river segment has a relatively high width-to-depth ratio, as would be expected with a river of this length, sediment load, and extreme flow variations. Low summer flows are spread into wide cross-sections, increasing the volume of water exposed to solar radiation. The percent of effective shade provided by vegetation decreases as channel width increases and is expected to be minimal for this segment. Temperature gains per mile vary widely between basins and depend on variables such as aspect, geology, vegetation, river width, and latitude. The ODEQ will conduct temperature modeling to develop TMDLs for the Lower John Day in the year 2005.

Instantaneous water temperature measurements at Cottonwood Bridge have been measured on a monthly basis by ODEQ for their Oregon Water Quality Index Reports. The 13 instantaneous measurements for June averaged 64\_ F. According to 22 afternoon measurements, the average daily afternoon water temperature is about 73\_ F in July and August.

Water quality in the lower river and in this segment is the result of upstream and local conditions. During the summer when flows are low, water temperatures exceed the criteria for rearing anadromous fish (ODEQ 1998). During low flow periods, water samples collected from McDonald Ferry indicate high levels of total phosphates, total suspended solids, biochemical oxygen demand, and fecal coliform. High levels of these pollutants also occur during periods of high runoff as a result of erosion and field runoff (Cude 2000).

The ODEQ non-point source assessment maps (ODEQ 1988) identify severe stream bank erosion and sedimentation in some of the major tributaries to the mainstem John Day. The OWRD (1986) has reported that water quality for cold water and warm water fish "...is on a downward trend threatening continued use of the water by that use." Since the time OWRD published these conclusions, however, ODEQ (1999) has noted, in reference to the entire lower John Day River, that water quality has "significantly improved" since 1985 (water quality parameters that make up the water quality index are temperature, dissolved oxygen, biochemical oxygen demand, pH, ammonia+nitrate nitrogen, total phosphates, total solids, and fecal coliform). The ODEQ data collected between 1985 and 1998 at Cottonwood Bridge, the upstream end of Segment 1, revealed no improvement or decline in water quality.

### **c. Fish**

This segment is within the lower John Day River subbasin and produces approximately 2% of the summer steelhead of the John Day basin (OWRD 1986). Steelhead spawning and rearing occurs in Grass Valley, Rock, and Hay creeks. The river itself functions as a migration corridor for adult and juvenile anadromous salmonids (summer steelhead and spring chinook) during fall and spring. During the summer months, the mainstem does not provide habitat for anadromous salmonids. Adult spring chinook migrate in the spring through the segment to spawning areas in tributaries. Steelhead and spring chinook eggs hatch, and fry rear, in the tributaries during the following year. Smolts migrate downstream from rearing areas in the tributaries during the spring and early summer. In addition, a small run of fall chinook may have historically utilized this segment.

This segment provides year round habitat for smallmouth bass, which provides the most notable fishery in this segment.

#### **d. Vegetation**

The vegetation types in Segment 1 are among the driest within the basin. The average yearly precipitation is 9 to 12 inches. The river elevation rises from 270 feet to 520 feet above sea level, and the canyon walls rise to 1,600 feet above sea level. Most upland soils are stony and well drained, and hill slopes tend to be steep (35% to 70%).

Segment 1 lies entirely within the Columbia Basin ecoregion (Oregon Biodiversity Project 1998). Upland plant communities have been described as “dry grass” and “dry shrub” in ICBEMP (Quigley and Arbelbide 1997). The plant communities are generally dominated by bluebunch wheatgrass on south-facing slopes and Idaho fescue on north-facing slopes. Where sagebrush grows, it is usually low sagebrush or Wyoming big sagebrush. Some of the historic bunchgrass communities are now occupied by cheatgrass, Russian thistle, fiddleneck, snakeweed, and shrubs such as gray rabbitbrush. The most common noxious weed species in this segment are knapweeds and salt cedar.

Columbia cress, hepatic monkeyflower, porcupine sedge and Torrey’s rush are all suspected to occur in this river segment, but have not been found.

Riparian soils tend to be highly stratified river alluvium that deposits material from upriver or side canyons (USDA-SCS 1964,1977). The alluvial sources from further up the river tend to be silty and clayey, whereas material from side canyons is more silty and sandy soils mixed with gravel, cobble and boulders. Riverwash mainly consists of sand, well-rounded gravel, stones, and boulders, although varying amounts of silt and clay material may be present due to redeposition from cutbanks.

Riparian plant communities vary in Segment 1, due in large part to the variable ecological sites. The establishment and health of willows, sedges, and rushes depends greatly on the ecological site potential of any given location in a river segment. Some areas that have received riparian-oriented management have developed dense stands of coyote willow, although natural forces (such as flooding, a mobile substrate, and ice flows) can have a retarding effect. Other locations have responded to riparian-oriented management with increased vigor and reestablishment of sedge and rush communities. On other sites, however, no response has been detected. Future correlation is needed between the ecological site potential of any particular spot on the river and results of a monitoring study of that location.

The functionality of the riparian area in this segment was rated in 1997, using the Proper Functioning Condition Assessment method (USDI-BLM 1993, 1998c). The functional rating for Segment 1 was “functional-at risk,” meaning the riparian zone is in a functional condition, but susceptible to degradation from significant natural events or excessive human-caused influences. The trend rating was “upward,” which means the riparian area is improving in its overall condition. The assessment found the riparian vegetation lacked in diverse age-class distribution and composition of vegetation. Plant species that indicate good riparian, soil-moisture-holding

characteristics were well represented, but lacked continuity along the river to make this characteristic fully functional. In addition, this same lack of continuity existed with species that produce root masses capable of withstanding high flows. Also, there was a lack of vegetation cover present to protect banks and to dissipate flow energy during high water events. The riparian vegetation that is present exhibits high plant vigor. The PFC assessment is not designed to identify past causes of functional deficiencies in riparian areas, but to ascertain present functionality of the interaction among geology, soil, water, and vegetation. A particular rating is a product of human-caused influences (such as grazing and mining) and natural forces. In addition, the extent of future recovery hinges on management practices and ecological site potentials.

#### **e. Agriculture**

Non-irrigated wheat production is the dominant agricultural use of this area, occurring on the plateaus outside of the river canyon. There are some privately owned irrigated fields, primarily used for pasture and hay production, along the river in this segment.

At approximately river mile (RM) 23, irrigated agriculture occurs on 8.7 acres of BLM-administered lands. This land is managed as part of an adjacent privately owned field. This field is located on the adjacent terrace, parallels approximately 1,650 feet of the John Day River, and is separated from the active flood plain by an access road. There are 0.22 cfs of water rights associated with this land.

#### **f. Grazing**

Segment 1 contains 14 grazing allotments. One allotment (#2597) continues into Segment 2. Public land acreage in allotments in this segment varies from 40 to 4,743 acres, and public land forage varies from 3 to 155 AUMs. There are approximately 29.6 river miles (59.2 river bank miles) in Segment 1, and about one-third of the river frontage is public land.

Allotment evaluations have been completed for 11 of the 14 grazing allotments in the segment, and changes in grazing management have occurred on 8 allotments. The changes include moving grazing use from primarily grazing during the warm season (late spring and summer) to cool season grazing (winter or early spring) or exclusion of grazing in some cases. In addition, by limiting grazing to seasons where the river flow is high, the river serves as an effective barrier to the movement of cattle, promoting the growth of grazed vegetation. Previously, some riparian exclosure fences were rendered ineffective, because cattle from allotments on the other side of the river would simply wade across the river during the summer to graze on riparian vegetation supposedly protected by fences. Riparian areas now fenced from uplands are not being grazed, whereas previously they were grazed by a neighbor's livestock.

Current grazing management practices were judged by a BLM interdisciplinary team to be appropriate for protecting and enhancing river values on 66% (12.7 miles) of the public river bank miles in this segment.

## **g. Recreation**

The small amount of public land and public access in Segment 1 restrict recreational opportunities. Where public land and access do exist, recreation opportunities include hunting, camping, fishing, boating, swimming, wildlife watching, and exploring the Oregon Trail. Boats can be used to access this area via the launch sites at Cottonwood Bridge and McDonald Ferry, and boaters primarily visit this segment to fish for smallmouth bass and steelhead, or to hunt for deer and chukar. The river in this segment is characterized by long, quiet stretches broken by a few Class I and II rapids. Floating between the two access points normally takes about two days.

Cottonwood Bridge serves as a major take-out point for multi-day boating trips originating upstream at Clarno, with an estimated 1,900 boaters using this site as a take-out point in 1998. In 1998, an estimated 150 boaters launched from Cottonwood bridge, either landing at McDonald Ferry or returning to Cottonwood Bridge by traveling back upstream in motorized boats or canoes. At Cottonwood, two motorized trips were registered in 1998, one each in April and October, but their direction of travel is unknown. Assuming that both trips traveled into Segment 1, the two trips represent six motorized boating use days in April and two motorized boating use days in October, accounting for eight motorized boating use days launching from Cottonwood in 1998. No motorized use was recorded from Cottonwood during November 1998.

There is no public take-out for floatboats downstream of McDonald Ferry. Therefore, the most common way to access the river between McDonald Ferry (RM 21) and Tumwater Falls (RM 10) is to use a motorized boat to return upstream to McDonald Ferry or to seek permission for access from a private landowner. Although no boater registration data is available for McDonald Ferry, increasing numbers of people use motorized boats to access this area for steelhead fishing and upland bird hunting. Several private helicopters are also used for recreation access to this river segment.

The Cottonwood Bridge Recreation Site (J.S. Burres State Park) is the most developed recreation site in this segment. It is owned by Oregon Parks and Recreation Department (OPRD) and managed cooperatively by OPRD and BLM under a long-term lease agreement. The site is maintained by the BLM and volunteers. This site is used for boat launching and landing, fishing, picnicking, swimming, and as a popular highway rest area. Facilities at this site include a primitive boat launch, a boater registration station, parking, a picnic table, vault toilets, and a toilet dump station for boaters who have just completed a river trip. Overnight camping is not allowed at this site.

There is a small recreation site accessible by county road at Rock Creek that contains several picnic tables and limited parking. Overnight camping is allowed at the site currently maintained by volunteers.

A comprehensive inventory of dispersed river campsites has not been completed for this segment. Map surveys and general knowledge of the area, however, indicate that approximately 30 locations along the river could be used for camping, approximately 10 of which are on public land. Primitive river campsites are generally in good condition due to infrequent use.

Commercial permittees reported 28 boating use days in Segment 1 during 1998, all of which occurred in November for steelhead fishing.

#### **h. Access**

This river segment is accessible to the public by boat or two public roads, one at Cottonwood Bridge (RM 40) and the other at McDonald Ferry (RM 21) (also called McDonald, McDonald Ford, and McDonald Crossing).

The primary public access to this segment is at the recreation site (which contains a boat launch) next to Cottonwood Bridge, where State Highway 206 crosses the John Day River. After float boaters leave Cottonwood Bridge, there is no public road access until McDonald Ferry where the river's east and west banks are accessible by county road. Conflicts between visitors and private landowners sometimes occur on both sides of the river here, often due to confusion over ownership of the bed and banks of the John Day River, which has yet to be determined. There is no public road access to the river downstream from McDonald Crossing, and boat access to the Columbia River is blocked by Tumwater Falls (RM 10). The downstream end of Tumwater Falls is accessible by boat from Lake Umatilla, which backs up to Tumwater Falls from the John Day Dam on the Columbia River.

Table 12 lists the ephemeral, intermittent and perennial streams within Segment 1 that contain or may have downstream effects on listed steelhead or their critical habitat.

Table 12. - Stream miles of summer steelhead habitat within Segment 1 from Tumwater Falls to Cottonwood Bridge. Steelhead habitat was taken from the ODFW ORIS database (1994). Potential steelhead habitat was determined using professional judgement.

<b>Stream Name</b>	<b>BLM Miles</b>	<b>Tributary to</b>	<b>Flow Regime</b>	<b>Steelhead Waters</b>
Cottonwood Canyon East	.125	John Day River	Ephemeral	None
John Day River	7.5	Columbia River	River/Perennial	Migratory



**Description of Ratings of Baseline Indicators for the Mainstem Lower John Day River Corridor Segment 1 from Tumwater Falls to Cottonwood Bridge.**

**Water Temperature:** At mouth, summer values exceeded Oregon DEQ standard of 64°F each year between 1986-1995 with a maximum of 83°F. ODFW notes that water temperatures provide a sufficient thermal barrier in the lower river which discourages fish migration until water temperatures drop to suitable ranges typically beginning September to October. Fish therefore use this habitat as migratory only when temperatures coincide with tolerance levels. **Not Applicable or At Risk**

**Sediment/Turbidity:** The John Day River transports some volume of sediment every year. Consistent sources of sediment occur along the rivers edge including many agricultural fields which lose portions next to the river on a frequent basis. **At Risk**

**Chemical Contamination/Nutrients:** There are no known chemical contaminants in these areas. **Properly Functioning**

**Physical Barriers:** There are no physical barriers such as dams or falls within the section of the watershed. **Properly Functioning**

**Substrate:** There are sources of sediment within the basin; however, sediment buildup within the gravels of the stream channel is not a problem. The dominant substrate is cobble and gravel. There is no spawning or rearing habitat in this reach of the river. **Not Applicable**

**Large Wood:** Large wood in the Lower John Day River, with its narrow canyon walls and marked lack of recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

**Pool Frequency:** Pools in river are associated with lateral scour and bends in the river corridor. **Properly Functioning**

**Pool Quality:** Lateral scour nature of mainstem pools maintains pools in a fairly static condition year to year. **Properly Functioning**

**Off-Channel Habitat:** This is a minor component for fish habitat within the lower river. Migrating steelhead key to the river thalweg, particularly juveniles. During summer months steelhead do not inhabit this lower mainstem section of the river. **Not Applicable**

**Refugia:** Migratory travel corridor habitat only. **Not Applicable**

**Width/Depth Ratio:** The Lower John Day River is a system in which water volume fluctuates significantly from season to season. High flows in excess of 10,000 cfs regularly occur in winter to spring runoff times, while summer flows of less than 100 cfs occur in some stretches of the lower river. The bank controlling factors for the lower river are predominantly steep canyon walls, interspersed

with broader floodplain valleys. Width to Depth ratios are most likely consistent with standards given the channel controlling factors evident in the basin. **Properly Functioning**

**Streambank Condition:** The nature of the lower river is a narrow canyon between steep canyon walls interspersed with broader floodplain/agricultural areas. In many instances banks are composed of steep bedrock. Many other areas are characterized by large cobble/small boulder streambanks that are increasing with regard to willow presence and health. Most of the streambank within the lower basin are stable. However, areas associated with wide valley bottom and fine alluvium bank material show signs of erosion. **At Risk**

**Floodplain Connectivity:** The canyon topography of much of the lower river maintains a connection between floodplain and river channel. Areas characterized by broader floodplains are inundated only by the river in times of excessive flow. **At Risk**

**Changes in Peak/Base Flows:** Any changes to peak/base flows in the lower John Day River corridor, are likely the result of cumulative effects of land management practices within the entire drainage area. Gauging station data shows that since flows have been monitored on the Lower John Day River (1906-present), all flows over 25,000 CFS have occurred since 1965. Irrigation use alters base flows, most notably during the months of July-September. **At Risk**

**Increases in Drainage Network:** Roads near the river corridor are few and likely have not increased the drainage network. **Properly Functioning**

**Road Density and Location:** Access to the river corridor is very limited via road. **At Risk**

**Disturbance History:** The lower John Day River corridor is not suitable conifer forest habitat. **Not Applicable**

**Riparian Reserves:** An assessment of the potential of the various riparian sites has not been made in the lower basin. However, riparian areas in certain areas are recovering as witnessed by increases in hydrophytic vegetation especially willows. **Not Applicable**

**Description of Ratings of Baseline Indicators for the ephemeral drainage in Segment 1 from Tumwater Falls to Cottonwood Bridge, Cottonwood Canyon East.**

**Water Temperature:** Water temperature in these types of systems has not been monitored. Water typically only flows during times of high or extreme runoff usually specific to individual storm events and locations. **Not Applicable**

**Sediment/Turbidity:** Sediment transport within this ephemeral draw on a yearly basis is low. This area only moves water during extreme precipitation events and that are usually highly localized. Sediment transport will occur at these times. Erosion is dependent on ground condition, this area is typically not moist enough to allow hydrophytic plants to grow. This area mimics upland areas in terms of management and condition. This drainage flows downstream into migratory steelhead habitat. **Properly Functioning**

**Chemical Contamination/Nutrients:** There are no known chemical contaminants in this area. **Properly Functioning**

**Physical Barriers:** There is no fish habitat within this area therefore physical barriers such as dams or falls within the section of the watershed are **Not Applicable**

**Substrate:** This drainage does not support fish habitat, substrate is therefore **Not Applicable**

**Large Wood:** Large wood in the Lower John Day River basin, with its narrow canyon walls and marked lack of recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

**Pool Frequency:** There are no residual habitats within this drainage. **Not Applicable**

**Pool Quality:** There are no residual habitats within this drainage. **Not Applicable**

**Off-Channel Habitat:** There are no residual habitats within this drainage. **Not Applicable**

**Refugia:** There are no residual habitats within this drainage. **Not Applicable**

**Width/Depth Ratio:** There are no residual habitats within this drainage. **Not Applicable**

**Streambank Condition:** This drainage mimics upland areas in terms of management and condition. **Not Applicable**

**Floodplain Connectivity:** The canyon topography of this drainage maintains a strict connection between floodplain and channel. Since flows occur usually at flood periods in this area the drainage area is synonymous with the floodplain. **Properly Functioning/Not Applicable**

**Changes in Peak/Base Flows:** The nature of the drainage, topography and seasonal conditions has not changed drastically over time. **Not Applicable**

**Increases in Drainage Network:** Highway 206 follows this drainage for a short distance, the periodic nature of flow in this area limits impacts from roads. Outside of this major highway there have been no further increases in the road network within the drainage. **Properly Functioning**

**Road Density and Location:** Highway 206 follows this drainage for a short distance, the periodic nature of flow in this area limits impacts from roads. **Properly Functioning**

**Disturbance History:** BLM harvest of timbered land parcels within this drainage is non-existent. **Not Applicable**

**Riparian Reserves:** To characterize this habitat indicator, an assessment of the potential riparian sites on public lands would have to be done. No such assessment has been made. **Not Applicable**

## **2. Segment 2: Cottonwood Bridge to Clarno**

### **a. Location and Characteristics**

This river segment winds 70 miles downstream from Clarno Bridge at State Highway 218 (RM 109) to Cottonwood Bridge on State Highway 206 (RM 40). This segment is well known for spectacular scenery and contains very high canyon walls. The river meanders more in this segment than in adjacent segments. This segment is also very remote and contains no public road access, except for two roads at each end of the segment.

### **b. Water Quantity and Quality**

Segment 2 drains about 906 square miles of arid lands. Precipitation here is around 10 inches per year, and mean annual runoff is between 0.5 and 0.75 inches per year. This means that this segment contributes between 35 and 50 cfs per year, based on calculations of data from OWRD (1986). Discharge patterns, peak flows, and duration of flow events are similar to those of Segments 1 and 3. Butte Creek, Thirtymile Creek, and Pine Hollow Creek are the main tributaries to this segment. Butte Creek flow averages from one to five cfs, July through October.

In 1996, the ODEQ included the 70 miles of Segment 2 in the 303(d) list of water quality limited streams under the parameter of temperature. The criteria of 64\_ F is based on the beneficial use of the waters for fish rearing. Instantaneous water temperature measurements at Cottonwood Bridge have been measured monthly by ODEQ for their Oregon Water Quality Index Reports. These measurements are taken at the downstream end of Segment 2. Thirteen instantaneous water measurements (1985-1998) averaged 64\_ F. Based on 22 afternoon measurements, the average daily afternoon water temperature is about 73\_ F in July and August (Cude 2000).

Water quality impairment from within this segment is a consequence of stream bank erosion and sedimentation. In the past, Condon and Fossil municipal sewage treatment facilities were discharging poor quality effluent into Thirtymile and Butte Creeks (OWRD 1986.) The ODEQ is pursuing correction of problems at both facilities. However, the history of sewage discharge can influence current conditions because pollutants collect in stream sediments. This condition can exacerbate problems associated with eutrophication during low flows that result in the release of contaminants during periods of high flows. "Water quality constituents such as total phosphates, biochemical oxygen demand, and fecal coliform are typically elevated during late summer when flow is lowest and water temperatures are the highest" (Cude 2000). Average Oregon Water Quality Index scores are poor in the summer and fair during the fall, winter and spring (Cude 2000).

### **c. Fisheries**

Like Segment 1, this segment is a migration corridor for adult and juvenile anadromous fish from September to the following May and June. Meaningful water temperature data is not available for this segment, but is assumed to be similar to Segment 3. Thirtymile and Butte Creeks provide steelhead and rainbow trout with spawning habitat. Butte Creek is important for improving water quality in the mainstem due to its colder water temperatures (ODFW 1991). Pine Hollow Creek intermittently provides spawning and rearing habitat for steelhead, depending on water flows. Two other tributaries (Jackknife and Little Ferry Canyons) may still produce steelhead intermittently, but direct observations have not been made. Productivity of smallmouth bass in this segment is considered to be excellent and is a nationally known fishery (ODFW 1991). Channel catfish are also present in this segment.

### **d. Vegetation**

Segment 2 annually receives an average of 11 to 15 inches of precipitation. The river elevation rises from 520 feet to 1,380 feet above sea level, and the canyon walls rise to 2,600 feet above sea level. Canyon slopes in this segment are extreme, often exceeding 70%.

Segment 2 lies within both the Columbia Basin and the Lava Plains ecoregions, with the break being near Butte Creek (Oregon Biodiversity Project 1998). The upland plant communities have been described by ICBEMP as “dry grass” and “dry shrub,” with the “cool shrub” type beginning at Butte Creek and progressing upstream (Quigley and Arbelbide 1997). Stiff sage communities become common on ridges. Sagebrush stands become denser on the hill slopes, and junipers form occasional, sparse stands in draws and on low terraces.

Riparian vegetation and soils are the same as those in Segment 1 (USDA-SCS 1964, 1970, and 1977). Two extensive willow surveys were completed on public land in this segment and Segment 3 in 1980 and 1995 (USDI-BLM 1996a). In Segment 2, Coyote willow increased from zero linear miles in 1980, to 9.50 miles in 1995, and the number of acres covered increased from zero to 22.69.

Special status species known to occur in this river segment are Torrey’s rush and hepatic monkeyflower. Species suspected to occur in the segment are Lawrence’s milkvetch, porcupine sedge, and Columbia cress.

Functionality of the riparian area in Segment 2 was rated in 1997 using the Proper Functioning Condition Assessment (USDI-BLM 1993, 1998c). The functional and vegetation ratings were the same as Segment 1 (functional-at risk )(see Segment 1, Vegetation).

### **e. Riparian and Aquatic Habitat Restoration**

In 1992, due to a Farm Home Administration foreclosure, approximately 512 acres of land and 3 miles of west side river bank (RM 106 to RM 109), immediately downstream from the Clarno Bridge, were converted to public ownership. Grazing has not been authorized on the area since 1989. Unauthorized grazing was addressed with a fence on the east side of the river in 1996. The riverine terrace contains 232 acres of arable land with active water rights, of which 70 acres are currently in agricultural production.

Historical farming and grazing practices of the land adjacent to the river resulted in removal of the riparian vegetation. Bedload deposition has also occurred in the same general stretch of the river, causing lateral river channel movement. These situations have combined to create overall river bank conditions that have rapidly deteriorated in the last 15 years. Cut banks are extremely steep and high (up to 25 feet) in some areas. The areas most impacted have annual erosion approaching 20 feet per year. There has been limited natural recruitment and establishment of riparian vegetation (USDI-BLM 1996c). The meandering of the river could eventually remove the entire acreage of arable lands. It is unlikely that the eroding river banks would make any appreciable recovery without intervention. Resource concerns associated with the area include recreation, access, scenery, soils, fisheries and wildlife.

### **f. Agriculture**

Non-irrigated wheat production, the dominant agricultural use of this area, occurs on the plateaus outside of the canyon. Irrigated agriculture occurs along the terraces of the John Day River, primarily in the vicinity of Cottonwood Bridge, Butte Creek, and Clarno. Alfalfa hay is the most common irrigated crop grown along the river.

Segment 2 contains about 278.5 acres of public lands with water rights parallel to approximately 2.5 miles of the John Day River. These lands are associated with or adjacent to private agricultural lands. Activities include leased commodity production, riparian tree and shrub propagation and restoration, wildlife food and cover weed control, and non-use (Table 13). About half of the leased area is used for alfalfa hay, and the other for specialty seed crops such as carrot, onion, coriander, or beans.

Water rights associated with these lands are limited to 1/40 cfs per acre or less, and total use is not to exceed 5 acre-feet per acre during the irrigation season. However, actual use generally falls below the limits, depending upon actual precipitation and crop type. Table 13 shows estimated use for 1998.

<b>Table 13. Estimated Public Agricultural Land Water Use in Segment 2 (1998)</b>				
<b>Location River Mile (RM)</b>	<b>Non- use/Instream (acre/cfs)<sup>1</sup></b>	<b>Restoration/ Enhancement (acre/cfs)</b>	<b>Lease (acre/cfs)</b>	<b>Total (acres)</b>
RM 106.5- 109.5	107.1/2.7	65/1.6	60/1.5 <sup>2</sup>	232.1
RM 101.5	0	0	43/1.0	43
RM 98.75	0	0	3.4/.08 <sup>3</sup>	3.4
<b>Total</b>	<b>107.1/2.7</b>	<b>65/1.6</b>	<b>106.4/2.6</b>	<b>278.5</b>
<sup>1</sup> Approximate maximum potential water withdrawal based on 1/40 cfs per acre.				
<sup>2</sup> Ten acres of a 70-acre lease retained for wildlife food and cover in coordination with ODFW.				
<sup>3</sup> Recently discovered incidental agricultural use associated to private land agriculture production.				

### **g. Grazing**

Segment 2 contains 16 grazing allotments. A portion of one allotment (#2597) continues into Segment 1. Public land acreage in allotments in this segment varies from 343 to 14,683 acres; public land forage varies from 6 to 789 AUMs. There are approximately 69.6 river miles (139.2 river bank miles) in this segment, almost 4/5 of which are on public land.

Allotment evaluations have been completed on all but four allotments in this segment, one of which has no active grazing. Grazing decisions have been awaiting implementation on three allotments (#2538, 2591 and 2619). Grazing management changes have occurred on 13 of the 16 allotments, emphasizing cool season grazing (winter or early spring) over warm season grazing (late spring and summer). As in Segment 1, limiting grazing to seasons when river flow is high promotes growth of grazed vegetation and enhances the river's ability to serve as an effective barrier to cattle movement (see Grazing discussion for Segment 1).



Current grazing management practices were judged by an interdisciplinary team to be appropriate for protecting and enhancing river values on 98% (106.7 miles) of the public river bank miles in this segment. Implementation of grazing decisions resulting from this plan will enhance ORVs on the remaining 2% of the public river bank miles.

## **h. Recreation**

Oregon River Tours, a guidebook for Oregon rivers, states that the lower John Day River rates high on the list as a “scenic desert wilderness river tour” (Garren 1979). This description is especially applicable to Segment 2, where a combination of abundant public land, outstanding scenery, and limited road access creates excellent opportunities for recreation in a primitive setting. The undeveloped, largely natural viewshed provides visitors with a sense of wildness. In fact, two-thirds of this river segment flows through designated WSAs. Since road and foot access is extremely limited, recreationists primarily access this remote segment by boat for fishing, camping, hunting, wildlife watching, photography, hiking, and swimming. Fishing for smallmouth bass and steelhead is the most popular activity, followed by scenic floats, and hunting for deer and chukar. Floatboating is popular during late spring and early summer when optimum weather, fishing conditions, and ideal river flows overlap, and in the fall to access hunting areas. Primary public access is by boat via the BLM launch site at Clarno. Motorized users can also access this segment from October 1 to May 1 by traveling upstream from Cottonwood Bridge, located in Segment 1. Motorized boating use is not permitted in this segment between May 1 and October 1. The river in this segment is characterized by long, quiet stretches broken by one Class III/IV rapid (Clarno), one Class III rapid (Basalt), and occasional Class I and II rapids. Floating this 70-mile segment generally takes about five days.

Clarno Bridge serves as a major launch point for the 70-mile Clarno-to-Cottonwood float trip, and in 1998, most of the estimated 1,900 people making the trip launched from this site. A small percentage of boaters floating this segment chose to pay the private landowner for road access to a BLM launch point approximately 12 miles downstream at Butte Creek. In the past, the BLM provided a primitive launch and a boater registration station at Butte Creek. As of 1999, fee access to Butte Creek road and the primitive launch is no longer available, due to a change in private ownership. In 1998, an estimated 386 groups floated this segment, averaging 4.9 persons per group. The average trip length for this segment was 4.7 days, accounting for approximately 8,800 boater use days in 1998.

A total of six motorized trips were registered at Clarno and Cottonwood in 1998, one in March, three in April, and two in October. The direction of travel for these trips is unknown. Assuming that each of the trips traveled into Segment 2, the six trips represent four motorized boating use days in March, 21 motorized boating use days in April, and 12 motorized boating use days in October, accounting for 37 motorized boating use days in Segment 2 in 1998. No motorized use was recorded in Segment 2 during November 1998. The most popular fishing seasons are May through July for smallmouth bass, and September and October for steelhead. Hunting seasons run from late August through mid-January for upland birds, and from August through November for big game. The portion of this segment from Thirtymile Creek to Cottonwood Bridge is within the John Day River Wildlife Refuge. No waterfowl hunting is allowed inside the refuge.

The Clarno Recreation Site is the most developed recreation site in this segment. It is owned by Oregon Parks and Recreation Department (OPRD), managed cooperatively by OPRD and BLM under a long-term agreement, and maintained by the BLM. The site serves as

the major launch point for trips to Cottonwood Bridge and also as the main take-out point for multi-day boating trips originating upstream at Service Creek and Twickenham bridge. The site is also used by local residents for fishing, picnicking, swimming, and by travelers as a highway rest area. Facilities at this site include a primitive boat launch, a boater registration station, parking, vault toilets, and a river-toilet dump station. Overnight camping is not allowed. On busy weekends during boating season, the demand for launch lanes and parking space far exceeds the available facilities, and boaters must wait in line to launch or take-out and park along the highway right-of-way.

The Clarno area is a popular site for recreation activities. A BLM-maintained road on the west side of the river, downstream of Clarno bridge, provides access to approximately three miles of river frontage and neighboring uplands in the vicinity of the “Clarno Homestead” and Sorefoot Creek. This area is used for dispersed camping; nature study; boat landing; fishing; waterfowl and upland game bird hunting; and big game hunting. Upland game bird hunting became a recreational opportunity following a land exchange in 1992 and subsequent wildlife habitat improvement projects, including establishment and maintenance (via irrigation) of wildlife food and cover plots. Opportunities for this type of activity are rare in Segment 2 and, therefore, access to this opportunity in the Clarno area has increased and diversified recreational opportunities in this segment. Off-road vehicle use also occurs in the area, and resource damage attributed to off-road vehicle use is becoming an increasingly common occurrence.

In a preliminary survey of sites suitable for dispersed camping within this segment, the BLM identified approximately 78 sites located on public land, a few of which may be large enough to accommodate more than one group. Some popular dispersed campsites were found to be located on private land. Most campsites in this segment are in good condition, but some of the most popular sites are subject to bank erosion, soil compaction, loss of vegetation, tree cutting, trash, constructed furniture, fire rings scars, and human waste.

Most past commercial boating trips within this segment began at Clarno or Butte Creek. Some outfitters have agreements with private landowners to launch from private lands, which offer the flexibility to run shorter trips to meet customer desires. In 1998, during the time period of March through August, and October and November, commercial use of this segment included 28 trips, totaling approximately 899 customer use days and 185 guide days.

#### **i. Access**

Public road access to the river within this segment is available only in the Clarno area. The Clarno Recreation Site and boat launch are located where State Highway 218 crosses the John Day River.

A dirt road provides access to 3.5 miles of BLM-managed land along the river's west bank, just north of State Highway 218 and across from the Clarno Recreation Site. This area is managed by the BLM for wildlife habitat and recreation use. It is popular for bird hunting, camping and fishing, and has no developed facilities.

No public road access to the river exists between Clarno to Cottonwood Bridge, a distance of about 70 miles. About a dozen private, primitive dirt roads reach the river in this segment, but there is no legal public access by these routes.

Public access was historically available via county road to blocks of public river frontage on the east side of the river, beginning about three miles downstream of the Clarno Bridge. This road is now closed to the public, approximately 0.5 mile from State Highway 218. The status of legal public access is unclear beyond this point.

Table 14 lists the ephemeral, intermittent and perennial streams within Segment 2 that contain or may have downstream effects on listed steelhead or their critical habitat.

Table 14. - Stream miles of summer steelhead habitat within Segment 2 from Cottonwood Bridge to Clarno. Steelhead habitat was taken from the ODFW ORIS database (1994). Potential steelhead habitat was determined using professional judgement.

<b>Stream Name</b>	<b>BLM Miles</b>	<b>Tributary to</b>	<b>Flow Regime</b>	<b>Steelhead Waters</b>
Devils Canyon	0.25	John Day River	Ephemeral	None
Willow Spring Canyon	0.25	John Day River	Intermittent	None
Bruckert Canyon	0.1	John Day River	Ephemeral	None
Deep Canyon	0.25	John Day River	Ephemeral	None
Ferry Canyon	0.25	John Day River	Intermittent	Migratory
Little Ferry Canyon	0.25	John Day River	Intermittent	Migratory
Cow Canyon	0.25	John Day River	Ephemeral	None
Jackknife Canyon	0.25	John Day River	Intermittent	Migratory
Long Hollow	0.25	John Day River	Intermittent	None
Fern Hollow	0.25	John Day River	Ephemeral	None
Combine Canyon	0.25	John Day River	Ephemeral	None
Chisholm Canyon	0.25	John Day River	Ephemeral	None
Beef Hollow	0.25	John Day River	Ephemeral	None
Pine Hollow	0.25	John Day River	Intermittent	Migratory
Devils Canyon	0.25	John Day River	Ephemeral	None
Smith Canyon	0.25	John Day River	Ephemeral	None
Little Gulch	0.25	John Day River	Ephemeral	None
Big Gulch	0.25	John Day River	Ephemeral	None
Pete Enyart Canyon	0.25	John Day River	Intermittent	None
Chimney Springs Canyon	0.25	John Day River	Ephemeral	None
Sorefoot Creek	0.25	John Day River	Perennial	None
John Day River	50	Columbia River	River/Perennial	Migratory

**Description of Ratings of Baseline Indicators for Sorefoot Creek in Segment 2 from Cottonwood Bridge to Clarno.**

**Water Temperature:** Water temperature typically exceeds state DEQ water quality threshold of 64°. This streams does not provide any steelhead habitat. **Not Properly Functioning**

**Sediment/Turbidity:** Sediment is transported through this system during high flows. Sediment buildup appears to be occurring in some stream segments associated with hydrophytic plant populations. Dominant substrate is gravel/cobble/ sand. Early spring runoff produces moderate to high turbidity in this stream. **Not Properly Functioning**

**Chemical Contamination/Nutrients:** There are no known chemical contaminants in this area. **Properly Functioning**

**Physical Barriers:** There are no physical barriers associated with Sorefoot Creek. **Properly Functioning**

**Substrate:** Substrate is dominated by gravel/cobble with fines. Embeddedness is moderately high with fine sediment evident within the stream channel. **At Risk**

**Large Wood:** Large wood in the Lower John Day River basin, with its narrow canyon walls and marked lack of recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

**Pool Frequency:** Pool frequencies standards are not met in this stream. Many of this stream's reaches are improving in condition. As riparian conditions improve, pool frequencies are expected to increase. **Not Properly Functioning**

**Pool Quality:** Pool condition and quality is increasing in this stream area. Increased bank stability, as well as large boulder/bedrock features provide for depth and cover in many areas. Condition is on an upward trend. **At Risk**

**Off-Channel Habitat:** Off channel habitats are being developed as this stream develops and rebuilds floodplains. Beaver presence has also led to an increase in these habitats. **At Risk**

**Refugia:** This stream does not provide steelhead habitat, refugia are therefore non-existent for steelhead in this stream. **Not Applicable**

**Width/Depth Ratio:** Increase in healthy riparian vegetation has led to a narrowing of the stream's channel in some areas and therefore a decrease in the width to depth ratio. **At Risk**

**Streambank Condition:** Streambanks in many areas show evidence of downcutting. Changed grazing management on public land in the last 8 years has shown an increase in vegetation along the stream and a subsequent increase in floodplain area as well as sinuosity. Streambanks have improved with increases in riparian vegetation and root structure increase. Conditions are **Not Properly Functioning**

**Floodplain Connectivity:** This stream has historically had significant down cutting of its channel. Changes in grazing management have led to increased riparian vegetation, bank stability, and floodplain area. High flows have then led to a widening of stream bottom which has served to reestablish new floodplains in many areas. **At Risk**

**Changes in Peak/Base Flows:** Improvements in riparian vegetation and bank structure in recent years may be increasing base flows in some streams. This is still speculative, however. **At Risk**

**Increases in Drainage Network:** Roads have not increased the drainage network within the watershed. There has probably been some increase in sediment due to road placement, but the drainage network itself probably has not increased. **Properly Functioning**  
**Road Density and Location:** Road densities are low, with some valley bottom roads. **At Risk**

**Disturbance History:** BLM timber harvest of forested parcels within the drainage is non-existent. **Not Applicable**

**Riparian Reserves:** To characterize this habitat indicator, an assessment of the potential riparian sites on public lands would have to be done. No such assessment has been made. Riparian areas within this stream area is increasing in response to grazing management. Connectivity between high quality riparian areas is also increasing. **Not Applicable**

**Description of Ratings of Baseline Indicators for intermittent drainages in Segment 2 from Cottonwood Bridge to Clarno. These include: Ferry Canyon, Jackknife Canyon, Little Ferry Canyon, and Pine Hollow Creek.**

Generally streams within this category have very similar habitat components in varying amounts. These drainages are all characterized by similar habitat types including: seasonal/intermittent stretches of broad, channel, gravel/cobble substrate with little riparian vegetation, interspersed with areas of perennial stream usually associated with bedrock features, gravel/cobble substrate and presence of riparian vegetation. The difference in these types of habitat is typically the presence or absence of perennial reaches and residual pools where juvenile steelhead spend the summer.

**Water Temperature:** Water temperature typically exceeds state DEQ water quality threshold of 64° but does not exceed lethal limits for juvenile steelhead. This is due in large part to association between residual pools and water table. **Not Properly Functioning**

**Sediment/Turbidity:** Sediment seems to be transported through these systems during high flows. Sediment buildup does not appear to be occurring. **Properly Functioning**

**Chemical Contamination/Nutrients:** There are no known chemical contaminants in these areas. **Properly Functioning**

**Physical Barriers:** The physical barriers associated with these streams include the characteristic intermittent or ephemeral nature of the flow regime near the mouth of these tributaries. The lower section of these streams typically only flow during high spring runoff events, allowing a narrow margin for steelhead adults to move up into the drainage or juvenile steelhead to move downstream out of the basin. **At Risk**

**Substrate:** Substrate is dominated by gravel/cobble/boulder, and fines are not excessive in the substrate. **Properly Functioning**

**Large Wood:** Large wood in the Lower John Day River basin, with its narrow canyon walls and marked lack of recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

**Pool Frequency:** Residual pools in perennial sections of these streams do not meet pool frequency standards. The nature of intermittent streams dictates that most scour pools will dry up, diminishing available rearing habitat. **Not Properly Functioning**

**Pool Quality:** Residual pools are in good condition, usually deep, and associated with cool ground water sources. **Properly Functioning**

**Off-Channel Habitat:** There are no residual off channel habitats within these areas, for most of the channel is dry. **Not Applicable**



**Refugia:** Refugia is limited to existing residual pool habitats within these streams. **Not Properly Functioning**

**Width/Depth Ratio:** There is a lack of wetted stream channel during rearing periods. Available rearing habitat is dominated by isolated residual pools or short reaches, that often are not linked by surface flows. **Not Applicable**

**Streambank Condition:** Areas with residual summer habitat are characterized by moister ground conditions and higher presence of hydrophytic plant species. **Properly Functioning**

**Floodplain Connectivity:** Professional judgement rates this indicator as **At Risk**, based on the lack to stability in these systems.

**Changes in Peak/Base Flows:** Improvements in riparian vegetation and bank structure in recent years may be increasing duration that these streams flow water into the summer. This is still speculative, however. **At Risk**

**Increases in Drainage Network:** Roads have not increased the drainage network within the watershed. Most roads created in the area follow drainages already. There has probably been some increase in sediment due to road placement, but the drainage network itself has not increased. **Properly Functioning**

**Road Density and Location:** Many roads within the basin are along drainage areas; however, there is a fairly low density of road within the area to begin with. **At Risk**

**Disturbance History:** BLM timber harvest of forested land parcels within these drainages is non-existent. **Not Applicable**

**Riparian Reserves:** To characterize this habitat indicator, an assessment of the potential riparian sites on public lands would have to be done. No such assessment has been made. **Not Applicable**

**Description of Ratings of Baseline Indicators for the Mainstem Lower John Day River Corridor Segment 2 from Cottonwood Bridge to Clarno.**

**Water Temperature:** At mouth, summer values exceeded Oregon DEQ standard of 64°F each year between 1986-1995 with a maximum of 83°F. ODFW notes that water temperatures provide a sufficient thermal barrier in the lower river which discourages fish migration until water temperatures drop to suitable ranges typically beginning September to October. Fish therefore use this habitat as migratory only when temperatures coincide with tolerance levels. **Not Applicable or At Risk**

**Sediment/Turbidity:** The John Day River transports some volume of sediment every year. Consistent sources of sediment occur along the rivers edge including many agricultural fields which lose portions next to the river on a frequent basis. **At Risk**

**Chemical Contamination/Nutrients:** There are no known chemical contaminants in these areas. **Properly Functioning**

**Physical Barriers:** There are no physical barriers such as dams or falls within the section of the watershed. **Properly Functioning**

**Substrate:** There are sources of sediment within the basin; however, sediment buildup within the gravels of the stream channel is not a problem. The dominant substrate is cobble and gravel. There is no spawning or rearing habitat in this reach of the river. **Not Applicable**

**Large Wood:** Large wood in the Lower John Day River, with its narrow canyon walls and marked lack of recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

**Pool Frequency:** Pools in river are associated with lateral scour and bends in the river corridor. **Properly Functioning**

**Pool Quality:** Lateral scour nature of mainstem pools maintains pools in a fairly static condition year to year. **Properly Functioning**

**Off-Channel Habitat:** This is a minor component for fish habitat within the lower river. Migrating steelhead key to the river thalweg, particularly juveniles. During summer months steelhead do not inhabit this lower mainstem section of the river. **Not Applicable**

**Refugia:** Migratory travel corridor habitat only **Not Applicable**

**Width/Depth Ratio:** The Lower John Day River is a system in which water volume fluctuates significantly from season to season. High flows in excess of 10,000 cfs regularly occur in winter to spring runoff times, while summer flows of less than 100 cfs occur in some stretches of the lower river. The bank controlling factors for the lower river are predominantly steep canyon walls, interspersed

with broader floodplain valleys. Width to Depth ratios are most likely consistent with standards given the channel controlling factors evident in the basin. **Properly Functioning**

**Streambank Condition:** The nature of the lower river is a narrow canyon between steep canyon walls interspersed with broader floodplain/agricultural areas. In many instances banks are composed of steep bedrock. Many other areas are characterized by large cobble/small boulder streambanks that are increasing with regard to willow presence and health. Most of the streambank within the lower basin are stable. However, areas associated with wide valley bottom and fine alluvium bank material show signs of erosion. **At Risk**

**Floodplain Connectivity:** The canyon topography of much of the lower river maintains a connection between floodplain and river channel. Areas characterized by broader floodplains are inundated only by the river in times of excessive flow. **At Risk**

**Changes in Peak/Base Flows:** Any changes to peak/base flows in the lower John Day River corridor, are likely the result of cumulative effects of land management practices within the entire drainage area. Gauging station data shows that since flows have been monitored on the Lower John Day River (1906-present), all flows over 25,000 CFS have occurred since 1965. Irrigation use alters base flows, most notably during the months of July-September. **At Risk**

**Increases in Drainage Network:** Roads near the river corridor are few and likely have not increased the drainage network. **Properly Functioning**

**Road Density and Location:** Access to the river corridor is very limited via road. **At Risk**

**Disturbance History:** The lower John Day River corridor is not suitable conifer forest habitat. **Not Applicable**

**Riparian Reserves:** An assessment of the potential of the various riparian sites has not been made in the lower basin. However, riparian areas in certain areas are recovering as witnessed by increases in hydrophytic vegetation especially willows. **Not Applicable**

**Description of Ratings of Baseline Indicators for ephemeral drainages in Segment 2 from Cottonwood Bridge to Clarno.** These include: Devils Canyon lower trib, Bruckert Canyon, Deep Canyon, Cow Canyon, Fern Hollow, Combine Canyon, Chisolm Canyon, Beef Hollow, Devils Canyon upper trib, Smith Canyon, Little Gulch, Big Gulch, and Chimney Springs Canyon.

**Water Temperature:** Water temperature in these types of systems has not been monitored. Water typically only flows during times of high or extreme runoff usually specific to individual storm events and locations. **Not Applicable**

**Sediment/Turbidity:** Sediment transport within these ephemeral draws and tributaries on a yearly basis across the basin is low. These areas only move water at extreme precipitation events and usually are highly localized. Sediment transport will occur at these times. Erosion is dependent on ground condition, these areas are typically not moist enough to allow hydrophytic plants to grow. These areas mimic upland areas in terms of management and condition. Many of these drainage flow downstream into migratory or non-presence areas with regard to steelhead habitat. **Properly Functioning**

**Chemical Contamination/Nutrients:** There are no known chemical contaminants in these areas. **Properly Functioning**

**Physical Barriers:** There is no fish habitat within these areas therefore physical barriers such as dams or falls within the section of the watershed are **Not Applicable**

**Substrate:** Drainage bottoms of this type do not support fish habitat, substrate is therefore **Not Applicable**

**Large Wood:** Large wood in the Lower John Day River basin, with its narrow canyon walls and marked lack of recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

**Pool Frequency:** There are no residual habitats within these areas. **Not Applicable**

**Pool Quality:** There are no residual habitats within these areas. **Not Applicable**

**Off-Channel Habitat:** There are no residual habitats within these areas. **Not Applicable**

**Refugia:** There are no residual habitats within these areas. **Not Applicable**

**Width/Depth Ratio:** There are no residual habitats within these areas. **Not Applicable**

**Streambank Condition:** These areas mimic upland areas in terms of management and condition. **Not Applicable**

**Floodplain Connectivity:** The canyon topography of much of the lower river drainages maintains a strict connection between floodplain and channel. Since flows occur usually at flood periods in these areas the drainage area is synonymous with the floodplain. **Properly Functioning/Not Applicable**

**Changes in Peak/Base Flows:** The nature of the lower section of the drainage, topography and seasonal conditions has not changed drastically over time. **Not Applicable**

**Increases in Drainage Network:** Roads have not increased the drainage network within the watershed. Most roads created in the area follow drainages already. There has probably been some increase in sediment due to road placement, but the drainage network itself has not increased. **Properly Functioning**

**Road Density and Location:** Many roads within the basin are along drainage areas; however, there is a fairly low density of road within the area to begin with. Access to the river corridor is very limited via road. **Properly Functioning**

**Disturbance History:** BLM harvest of timbered land parcels within the lower John Day Basin is minimal. **Properly Functioning/Not Applicable**

**Riparian Reserves:** To characterize this habitat indicator, an assessment of the potential riparian sites on public lands would have to be done. No such assessment has been made. **Not Applicable**

### **3. Segment 3: Clarno to Service Creek**

#### **a. Location and Characteristics**

This is a 48-mile segment between Clarno and Service Creek. This segment is designated as a State Scenic Waterway and federal Wild and Scenic River, as are Segments 1 and 2. The federal Wild and Scenic River designation ends at Service Creek, but the State Scenic Waterway extends into Segment 4 to Parrish Creek. Segment 3 has wide valleys with high, colorful hills and rimrock in some areas. The segment contains agricultural lands, especially hay fields and pastures. This segment is in a remote setting, but roads and human-made structures are more numerous than in Segment 2.

The Clarno area is a popular site for recreation activities. Located on the west side of the river, downstream of Clarno bridge, is a BLM-maintained road that accesses approximately three miles of river frontage and the neighboring uplands, in the vicinity of the “Clarno Homestead” and Sorefoot Creek. This area is currently used for dispersed camping, nature study, boat landing, fishing, waterfowl, upland game bird and big game hunting. Beginning with a land exchange in 1992 and subsequent wildlife habitat improvement projects including the establishment and maintenance, via irrigation, of wildlife food and cover plots, this area has offered the recreational opportunity of upland game bird hunting. Opportunities for this type of activity are rare in Segment 2 and, therefore, access to this opportunity in the Clarno area has increased and diversified recreational opportunities in this segment. Off-road vehicle use also occurs in the area and resource damage attributed to off-road vehicle use is becoming an increasingly common occurrence.

#### **b. Water Quantity and Water Quality**

This segment of the subbasin drains an area of about 1,431 square miles, including water from the upper basin. Peak discharge occurs from late-March to early-June, and low flows occur from July through November. Local ground water sources provide some base flows to the river. Major tributaries are Bridge, Muddy, Service, Rowe, and Pine creeks.

Water volume entering this segment is measured by a gauge at Service Creek. Recordings at the gauge, located roughly at the midpoint of the subbasin, provide a record of water production above that point. It indicates that the subbasin above the gauge produces an average of about 1,518,000 acre-feet of water per year (USGS 1999). There is no gauge near Clarno, so the amount of water flowing out of this segment is unknown.

The basin discharge pattern has changed from historic times, in that more discharge now occurs in the winter months, with higher peak flows. High peak flows have great erosive power and can change the stream profile. The maximum discharge, or flood flow, recorded at Service Creek was 40,200 cfs on December 23, 1964. The minimum recorded was 6 cfs on August 23 and 24, 1973.

The ODEQ monitors the John Day River at Service Creek, 28 miles downstream from the confluence of the North Fork. Water quality here is similar to water quality in the North Fork. Since the North Fork contributes 60% of the flow to the John Day, its influence on the water quality parameter of temperature is substantial. Eutrophication during the low flow summer months exacerbates conditions of elevated pH and dissolved oxygen supersaturation (Cude 2000). Average OWQI scores for the John Day River at Service Creek are “fair” in the summer and “excellent” during the remainder of the year. This site exhibited a significant increase in water quality from 1985 to 1998 (Cude 2000).

Surface runoff and erosion increase during periods of high flows and in relation to episodic weather events like thunderstorms. As a result, during these periods turbidity, fecal coliform, and sediment transport are elevated. During low flow periods elevated water temperatures reduce dissolved oxygen. This segment was placed on the ODEQ 303(d) list for exceeding state criteria for water temperatures during the summer months (Table 15). Since the monitoring data used to determine site water quality is located at the upstream end of this segment some of the temperature condition may be consequent of upstream land management activities or varies in relation to natural background levels. Decreasing water temperatures can result from: 1) radiative (heat) loss from water when the surrounding environment is cooler than the stream (this occurs mainly at night when air temperature is lower); or, 2) input from groundwater or surface flow (such as stream confluences) where the new water input is lower temperature than the water already instream. Instantaneous water temperatures recorded at Service Creek during July and August averaged 22.977 C (73.4\_ F), and temperatures of samples taken at Cottonwood Bridge about two hours later in the day averaged 23.665 C (74.6\_ F) for the same dates (Cude 2000-20 data points 1981-1998). During the summer months, there is very little input of water into the system between Service Creek and McDonald Crossing, so decreases in temperature within stream are not likely below Service Creek.

<b>Table 15. Percent of Time Water Temperature Exceeded State Water Quality Temperature Standard of 64_ for 7-day Running Maximum Temperature at Service Creek</b>			
<b>Year</b>	<b>Beginning Date</b>	<b>Ending Date</b>	<b>Percent of Days Exceeded Standard</b>
1993	6/23/93	9/9/93	73
1994	5/12/94	6/18/94	27
1995	7/27/95	9/26/95	98
1997	6/2/97	10/1/97	90
1998	6/16/98	9/07/98	100

The tributaries carry high sediment loads that are elevated during storms or other episodic events. Some of the tributaries are characterized by very fine-textured soils. During periods of heavy rain, these soils are eroded and remain in suspension in the river. This results in elevated turbidity and high levels of suspended solids in this segment.

There are no permitted waste discharges to the streams of this segment. The town of Mitchell has no municipal sewage treatment facilities and relies on individual septic systems.

Ground water quality is unknown for this subbasin due to lack of water quality information. The landfills at Mitchell (Bridge Creek Drainage) and Muddy Creek Ranch could have an effect of introducing pollutants into the ground water. At present, the effect of these facilities on water quality is unknown.

### **c. Fisheries**

This segment is part of the middle mainstem subbasin that produces approximately four percent of the John Day basin summer steelhead. As many as 800 adult summer steelhead return annually to spawn. As in Segments 1 and 2, the mainstem in this segment serves primarily as a migration corridor for anadromous runs to spawning and rearing habitat in the upper subbasins (USDI-BLM 1995a). Spawning habitat conditions for steelhead and resident trout exist in Bridge, Service, and Cherry creeks. The BLM manages a large portion of the Bridge Creek watershed and has conducted extensive habitat improvement projects via instream structures and riparian vegetation recovery throughout the system. Production within these streams, however, is limited due to high water temperature and low flows during the summer.

Populations of smallmouth bass and channel catfish are present in this segment of the river. Smallmouth bass, especially, attract anglers from across the nation.

Habitat for salmonid spawning and rearing in the mainstem of the John Day River is limited. The river generally lacks sufficient substrate for spawning and is wide and shallow during periods of rearing. Flow and water temperatures are marginal for salmonid production. During this time, salmonids are typically present within tributaries and do not use the mainstem river as summer habitat. Stream flows between fall and spring, however, are adequate to support migration to tributary spawning and rearing areas and to quality habitat in the upper subbasins. Smallmouth bass reproduction and population numbers do not limit salmonid populations in this area, because smallmouth bass typically occupy different habitat with higher water temperatures than steelhead fry and trout. Warmer water temperatures that limit salmonid presence in the summer tend to promote smallmouth bass populations.



#### **d. Vegetation**

Segment 3 averages 11 to 15 inches of precipitation annually. The river drops from 1,640 feet above sea level to 1,380 feet above sea level, and the canyon walls rise to around 3,500 feet above sea level. Soils are generally a clay-loam type with interspersed areas of clay, gravel, and random basalt outcrops. The canyon slopes are similar to Segment 1 (35 to 70%), except for one section between RM 119 and RM 126, where the slopes can vary from 50 to 90%.

Segment 3 is entirely within the Lava Plains ecoregion (Oregon Biodiversity Project 1998). Upland plant communities have been described in ICBEMP as “dry shrub” and “cool shrub” (Quigley and Arbelbide 1997). The vegetation communities are similar to Segment 1. Western juniper is scattered throughout the segment with dense stands occurring in some of the tributary drainages to the John Day River. The most common noxious weed species are diffuse, Russian and spotted knapweeds, yellow starthistle, and dense isolated stands of bull and Canada thistle.

The riparian vegetation and soils (USDA-SCS 1970) are also similar to Segment 1, with one exception; there appears to be an increasing amount of reed canary grass. This introduced species tends to outcompete native species, resulting in a monoculture and reduced habitat diversity. In addition, two extensive willow surveys were completed on public land in this segment and Segment 2 in 1980 and 1995 (USDI-BLM 1996a). In Segment 3, Coyote willow increased from zero linear miles in 1980, to 6.06 miles in 1995, and the number of acres covered increased from zero to 13.15.

Special status species known to occur in this river segment are arrowleaf thelypody and Torrey’s rush. Species suspected to occur in the segment are porcupine sedge, hepatic monkeyflower and Columbia cress.

The functionality of Segment 3 was rated in 1997 using the Proper Functioning Condition Assessment (USDI-BLM 1993, 1998c). The functional rating was “functional-at risk,” meaning the riparian zone is in a functional condition, but susceptible to degradation from significant natural events or excessive human-caused influences. The trend rating was “upward,” which means the riparian area is improving in its overall condition. The assessment found that the riparian vegetation lacked in diverse age-class distribution and composition of vegetation. Plant species that indicate good riparian, soil-moisture-holding characteristics were well represented, but lacked continuity throughout the segment to rate this characteristic fully functional. In addition, this same lack of continuity existed with species that produce root masses capable of withstanding high flows. Also, there was a lack of vegetation cover present to protect banks and to dissipate flow energy during high water events. The riparian vegetation that is present exhibits high plant vigor. The PFC assessment is not designed to identify the past causes of functional deficiencies in riparian areas, but to ascertain present functionality of the interaction among geology, soil, water, and vegetation. A particular rating is a product of human-caused influences (such as grazing and mining) and natural forces. In addition, the extent of future recovery hinges on management practices and ecological site potentials.

#### e. Agriculture

Agriculture is an important economic use of this segment. Hay is the primary crop grown in the cultivated fields along the river, which are irrigated with water drawn from the river.

Segment 3 contains approximately 97 acres of public lands with water rights (see Table 16). These lands are adjacent to approximately 0.75 miles of the John Day River. Ninety five acres are leased for production, generally alfalfa and oat hay. Two acres are utilized for production of cottonwood trees for restoration purposes. Twenty-six acres are scattered parcels incorporated into private agriculture lands and are separated from the river by private property. Approximately 71.5 acres are subject to BLM imposed irrigation restrictions that require terminating irrigation when John Day River flows drop below 390 cfs at the Service Creek Gauging Station (USDI-BLM 1996e).

<b>Table 16. Estimated Public Agricultural Land and Water Use for Segment 3 (Clarno to Service Creek) - 1998</b>				
<b>Location River Mile (RM)</b>	<b>Acres per cubic feet per second (cfs)</b>			
	<b>Non-use and/or Instream</b>	<b>Restoration and/or Enhancement</b>	<b>Lease</b>	<b>Total Acres</b>
RM 112	0	0	15.3/0.38	15.3
RM 119	0	0	10.3/0.25	10.3
RM 136	0	0	23.4/0.58	23.4
RM 137	0	2/0.05	46/1.15	48
<b>Total</b>	<b>0</b>	<b>2/0.05</b>	<b>95/2.36</b>	<b>97</b>
Approximate maximum potential water withdrawal based on 1/40 cfs per acre.				

#### f. Grazing

Segment 3 contains 22 grazing allotments. Public land acreage in these allotments vary from 80 to 20,410 acres; public land forage varies from 3 to 1,020 AUMs. Approximately one-third of the 96 river bank miles are public land.

Allotment evaluations have been completed on all but two allotments (#2641 and #2649, neither of which include John Day River riparian areas). Allotment #2649 has public land within the WSR corridor, and #2641 has some private land and no public land in the corridor. Grazing management changes have occurred on 16 of the 22 allotments. The changes have reflected a move away from primarily warm season grazing (late spring and summer), to cool season grazing (winter or early spring) or exclusion in some cases. As in Segments 1 and 2, limiting grazing to seasons when the river flow is high promotes growth of grazed vegetation and enhances the river's ability to serve as an effective barrier to cattle movement (see Grazing discussion for Segment 1).

Current grazing management practices were judged by an interdisciplinary BLM team to be appropriate for protecting and enhancing river values on 94% (30 miles) of public river bank miles in this segment. Implementation of grazing decisions resulting from this plan will enhance ORVs on the remaining 6% of the public river bank miles.

#### **g. Recreation**

Primary recreation opportunities in this segment include fishing, boating, dispersed camping, hunting, hiking, swimming, photography, and wildlife viewing. Fishing for smallmouth bass is very popular, as are scenic float trips, dispersed camping, and deer hunting. Boating generally occurs between April and July, when water levels and fishing conditions are best. Water levels normally drop below adequate boating levels in August, September and early October.

Boating provides the only public access to the river between Service Creek and Twickenham, and from Cherry Creek to Clarno East. Motorized boating is permitted on this segment year-round. Public vehicle access to the river is available between Priest Hole and Cherry Creek and at the Clarno Recreation Site, providing opportunities for vehicle-accessible outdoor recreation activities. Boat launching on public land occurs at Clarno, Priest Hole, Burnt Ranch (undeveloped), and Service Creek. The river in this segment is characterized by long, calm stretches interspersed with numerous Class I and II rapids. There are three Class III rapids (Russo, Homestead and Burnt Ranch).

The Service Creek Recreation Site serves as a major launch point for the popular 48-mile float trip to Clarno. A privately owned site adjacent to Twickenham Bridge, 13 miles downstream from Service Creek, has been used as a launch point by the public in the past. However, due to the private landowner's discretion, this site will no longer be available for public use after January 1, 2001. The majority of boaters access the river at Service Creek or Twickenham, but primitive boat access is available at Priest Hole and at Upper Burnt Ranch. Clarno East, 3.5 miles upstream of Clarno, is occasionally used as a take-out point. In 1998, an estimated 3,400 boaters used this river segment, averaging 5.3 persons per group. The average trip length for this segment was 2.7 days, accounting for approximately 9,200 boating use days. This segment of the river is especially popular for one-day or weekend float trips, canoeing, and boaters with limited whitewater experience.

Nine motorized launches were recorded at Clarno in 1998 (one each in March, April, and October, and three each in June and July).

Assuming that each of the 9 motorized trips traveled into Segment 3, these trips represent 4 motorized boating use days each in March and April, 12 use days in June, 8 use days in July, and 10 use days in October, totaling 38 motorized use days in Segment 3 in 1998.

The most popular fishing seasons are April through September for smallmouth bass, and the fall months for steelhead. Hunting occurs in the fall, with deer and chukar hunting the most popular. Hunting seasons run from late August through mid-January for waterfowl/upland birds, and from August through November for big game. Hunting in this segment is concentrated where vehicle access is available between Twickenham and Cherry Creek and near Clarno. Low flows do not normally allow for hunting access by boat during the fall and early winter months.

The Service Creek Recreation Site is the most developed recreation site in this segment. It is owned by the Oregon Department of Transportation, and is managed and maintained by BLM under a lease agreement. The site serves as the major launch point for trips to Twickenham and Clarno, and as a take-out point for one-day trips originating upstream in Segment 4. The site is also used for overnight camping (walk-in sites only), picnicking, fishing, swimming, and by travelers as a highway rest area. Facilities at this site include a primitive boat launch, a boater registration station, parking, vault toilet, picnic tables, and campfire grates.

The only other developed recreation site on public land in this segment is at Priest Hole, where BLM maintains a primitive boat launch and a boater registration station. This site has recently become very popular for dispersed camping, picnicking, fishing, swimming, and tubing. Illegal campfires, shooting, and human wastes are increasing problems. Several undeveloped recreation sites are also popular for recreation activities. Upper Burnt Ranch, which is accessible by foot or four-wheel drive vehicle, is used for dispersed camping, picnicking, fishing, swimming, and for boat access. Recreational use of OHVs at this site is creating ruts, resulting in erosion of red clay soils. Local landowners are frequently called on by recreationists for assistance in freeing vehicles that get stuck at this site. Clarno East is used for camping, picnicking, fishing, and boat access.

In a preliminary survey of sites suitable for dispersed camping within this segment, the BLM identified approximately 51 sites on public land, a few of which may be large enough to accommodate more than one group. In the Twickenham area, a 10-mile section of river with no campsites is available on public land. Several popular campsites are located on private land. Most of the campsites in this segment are in good condition, but some of the more popular sites are subject to bank erosion, soil compaction, loss of vegetation, tree cutting, trash, constructed furniture, fire rings scars, and human waste.

This is the most popular river segment for commercial boating trips, probably because a variety of launch points allows flexibility in scheduling the length and location of trips. In 1998, commercial use of this segment included 118 trips during the time period of January through October, totaling approximately 2,000 customer use days and 900 guide days.

## **h. Access**

Small and medium-sized blocks of public land, some accessible by vehicle and others by boat, provide a variety of recreation opportunities in this segment. State Highway 218 crosses the John Day River at Clarno. Here boaters can enter or exit the river at the Clarno Recreation Site, which is cooperatively managed by the BLM and OPRD. Clarno Road, a gravel county road, runs south from State Highway 218, paralleling the river on the east side for approximately five miles. The majority of the river frontage along this road is privately owned, but two small sections of public river bank can be reached via the road, including Clarno East, located approximately one mile south of State Highway 218. The last 1/4 mile of county road turns private before intersecting with a public travel route to Spring Basin WSA. Until 1999, the public was allowed to cross the 1/4 mile of private road to access the WSA (5,982 acres) and surrounding public lands, but this piece of private road has recently been closed to public use by the landowner.

Except for Clarno Road, there is no other public road access to the river between Clarno and Cherry Creek, a distance of 20 miles. Between Cherry Creek and Twickenham, a gravel county road roughly parallels the south side of the river for 16 miles, accessing two primitive public access points jointly referred to as Burnt Ranch (RM 132-133), and a primitive vehicle and boat access point at Priest Hole (RM 137). Except for one rough four-wheel drive access point, there is no public road access to the river between Priest Hole and Service Creek (20 miles), although a few private roads are visible from the river. There is a popular river access point on private land at Twickenham Bridge where a paved county road crosses the river. The landowner has allowed boats to be taken out or launched here in the past, but he intends to discontinue this practice on January 1, 2001. The BLM is working to acquire an alternative river access site in the Twickenham area.

Table 17 lists the ephemeral, intermittent and perennial streams within Segment 3 that contain or may have downstream effects on listed steelhead or their critical habitat.

Table 17. - Stream miles of summer steelhead habitat within Segment 3 from Clarno to Service Creek. Steelhead habitat was taken from the ODFW ORIS database (1994). Potential steelhead habitat was determined using professional judgement.

<b>Stream Name</b>	<b>BLM Miles</b>	<b>Tributary to</b>	<b>Flow Regime</b>	<b>Steelhead Waters</b>
Rhodes Canyon	0.25	John Day River	Intermittent	None
Rattlesnake Canyon	0.25	John Day River	Intermittent	None
Amine Canyon	0.25	John Day River	Ephemeral	None
Juniper Canyon	0.25	John Day River	Ephemeral	None
Dugout Canyon	0.25	John Day River	Intermittent	None
Tap Horn Canyon	0.25	John Day River	Ephemeral	None
Shoofly Creek	0.125	John Day River	Intermittent	None
John Day River	24.00	Columbia River	River/Perennial	Migratory

**Description of Ratings of Baseline Indicators for intermittent drainages in Segment 3 from Clarno to Service Creek. These include: Rhodes Canyon, Rattlesnake Canyon, Dugout Canyon, and Shoofly Creek.**

Generally streams within this category have very similar habitat components in varying amounts. These drainages are all characterized by similar habitat types including: seasonal/intermittent stretches of broad, channel, gravel/cobble substrate with little riparian vegetation, interspersed with areas of perennial stream usually associated with bedrock features, gravel/cobble substrate and presence of riparian vegetation. The difference in these types of habitat is typically the presence or absence of perennial reaches and residual pools where juvenile steelhead spend the summer.

**Water Temperature:** Water temperature typically exceeds state DEQ water quality threshold of 64° but does not exceed lethal limits for juvenile steelhead. This is due in large part to association between residual pools and water table. **Not Properly Functioning**

**Sediment/Turbidity:** Sediment seems to be transported through these systems during high flows. Sediment buildup does not appear to be occurring. **Properly Functioning**

**Chemical Contamination/Nutrients:** There are no known chemical contaminants in these areas. **Properly Functioning**

**Physical Barriers:** The physical barriers associated with these streams include the characteristic intermittent or ephemeral nature of the flow regime near the mouth of these tributaries. The lower section of these streams typically only flow during high spring runoff events, allowing a narrow margin for steelhead adults to move up into the drainage or juvenile steelhead to move downstream out of the basin. **At Risk**

**Substrate:** Substrate is dominated by gravel/cobble/boulder, and fines are not excessive in the substrate. **Properly Functioning**

**Large Wood:** Large wood in the Lower John Day River basin, with its narrow canyon walls and marked lack of recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

**Pool Frequency:** Residual pools in perennial sections of these streams do not meet pool frequency standards. The nature of intermittent streams dictates that most scour pools will dry up, diminishing available rearing habitat. **Not Properly Functioning**

**Pool Quality:** Residual pools are in good condition, usually deep, and associated with cool ground water sources. **Properly Functioning**

**Off-Channel Habitat:** There are no residual off channel habitats within these areas, for most of the channel is dry. **Not Applicable**

**Refugia:** Refugia is limited to existing residual pool habitats within these streams. **Not Properly Functioning**

**Width/Depth Ratio:** There is a lack of wetted stream channel during rearing periods. Available rearing habitat is dominated by isolated residual pools or short reaches, that often are not linked by surface flows. **Not Applicable**

**Streambank Condition:** Areas with residual summer habitat are characterized by moister ground conditions and higher presence of hydrophytic plant species. **Properly Functioning**

**Floodplain Connectivity:** Professional judgement rates this indicator as **At Risk**, based on the lack to stability in these systems.

**Changes in Peak/Base Flows:** Improvements in riparian vegetation and bank structure in recent years may be increasing duration that these streams flow water into the summer. This is still speculative, however. **At Risk**

**Increases in Drainage Network:** Roads have not increased the drainage network within the watershed. Most roads created in the area follow drainages already. There has probably been some increase in sediment due to road placement, but the drainage network itself has not increased. **Properly Functioning**

**Road Density and Location:** Many roads within the basin are along drainage areas; however, there is a fairly low density of road within the area to begin with. **At Risk**

**Disturbance History:** BLM timber harvest of forested land parcels within the lower John Day Basin is minimal. **Not Applicable**

**Riparian Reserves:** To characterize this habitat indicator, an assessment of the potential riparian sites on public lands would have to be done. No such assessment has been made. **Not Applicable**



**Description of Ratings of Baseline Indicators for the Mainstem Lower John Day River Corridor Segment 3 from Clarno to Service Creek.**

**Water Temperature:** At mouth, summer values exceeded Oregon DEQ standard of 64°F each year between 1986-1995 with a maximum of 83°F. ODFW notes that water temperatures provide a sufficient thermal barrier in the lower river which discourages fish migration until water temperatures drop to suitable ranges typically beginning September to October. Fish therefore use this habitat as migratory only when temperatures coincide with tolerance levels. **Not Applicable or At Risk**

**Sediment/Turbidity:** The John Day River transports some volume of sediment every year. Consistent sources of sediment occur along the rivers edge including many agricultural fields which lose portions next to the river on a frequent basis. **At Risk**

**Chemical Contamination/Nutrients:** There are no known chemical contaminants in these areas. **Properly Functioning**

**Physical Barriers:** There are no physical barriers such as dams or falls within the section of the watershed. **Properly Functioning**

**Substrate:** There are sources of sediment within the basin; however, sediment buildup within the gravels of the stream channel is not a problem. The dominant substrate is cobble and gravel. There is no spawning or rearing habitat in this reach of the river. **Not Applicable**

**Large Wood:** Large wood in the Lower John Day River, with its narrow canyon walls and marked lack of recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

**Pool Frequency:** Pools in river are associated with lateral scour and bends in the river corridor. **Properly Functioning**

**Pool Quality:** Lateral scour nature of mainstem pools maintains pools in a fairly static condition year to year. **Properly Functioning**

**Off-Channel Habitat:** This is a minor component for fish habitat within the lower river. Migrating steelhead key to the river thalweg, particularly juveniles. During summer months steelhead do not inhabit this lower mainstem section of the river. **Not Applicable**

**Refugia:** Migratory travel corridor habitat only **Not Applicable**

**Width/Depth Ratio:** The Lower John Day River is a system in which water volume fluctuates significantly from season to season. High flows in excess of 10,000 cfs regularly occur in winter to spring runoff times, while summer flows of less than 100 cfs occur in some stretches of the lower river. The bank controlling factors for the lower river are predominantly steep canyon walls, interspersed

with broader floodplain valleys. Width to Depth ratios are most likely consistent with standards given the channel controlling factors evident in the basin. **Properly Functioning**

**Streambank Condition:** The nature of the lower river is a narrow canyon between steep canyon walls interspersed with broader floodplain/agricultural areas. In many instances banks are composed of steep bedrock. Many other areas are characterized by large cobble/small boulder streambanks that are increasing with regard to willow presence and health. Most of the streambank within the lower basin are stable. However, areas associated with wide valley bottom and fine alluvium bank material show signs of erosion. **At Risk**

**Floodplain Connectivity:** The canyon topography of much of the lower river maintains a connection between floodplain and river channel. Areas characterized by broader floodplains are inundated only by the river in times of excessive flow. **At Risk**

**Changes in Peak/Base Flows:** Any changes to peak/base flows in the lower John Day River corridor, are likely the result of cumulative effects of land management practices within the entire drainage area. Gauging station data shows that since flows have been monitored on the Lower John Day River (1906-present), all flows over 25,000 CFS have occurred since 1965. Irrigation use alters base flows, most notably during the months of July-September. **At Risk**

**Increases in Drainage Network:** Roads near the river corridor are few and likely have not increased the drainage network. **Properly Functioning**

**Road Density and Location:** There is one main road which runs parallel to the river for approximately 16 miles. **At Risk**

**Disturbance History:** The lower John Day River corridor is not suitable conifer forest habitat. **Not Applicable**

**Riparian Reserves:** An assessment of the potential of the various riparian sites has not been made in the lower basin. However, riparian areas in certain areas are recovering as witnessed by increases in hydrophytic vegetation especially willows. **Not Applicable**

**Description of Ratings of Baseline Indicators for ephemeral drainages in the Lower John Day River Segment 3 from Clarno to Service Creek. These include: Amine, Juniper and Tap Horn Canyons.**

**Water Temperature:** Water temperature in these types of systems has not been monitored. Water typically only flows during times of high or extreme runoff usually specific to individual storm events and locations. **Not Applicable**

**Sediment/Turbidity:** Sediment transport within these ephemeral draws and tributaries on a yearly basis across the basin is low. These areas only move water at extreme precipitation events and usually are highly localized. Sediment transport will occur at these times. Erosion is dependent on ground condition, these areas are typically not moist enough to allow hydrophytic plants to grow. These areas mimic upland areas in terms of management and condition. Many of these drainage flow downstream into migratory or non-presence areas with regard to steelhead habitat. **Properly Functioning**

**Chemical Contamination/Nutrients:** There are no known chemical contaminants in these areas. **Properly Functioning**

**Physical Barriers:** There is no fish habitat within these areas therefore physical barriers such as dams or falls within the section of the watershed are **Not Applicable**

**Substrate:** Drainage bottoms of this type do not support fish habitat, substrate is therefore **Not Applicable**

**Large Wood:** Large wood in the Lower John Day River basin, with its narrow canyon walls and marked lack of recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

**Pool Frequency:** There are no residual habitats within these areas. **Not Applicable**

**Pool Quality:** There are no residual habitats within these areas. **Not Applicable**

**Off-Channel Habitat:** There are no residual habitats within these areas. **Not Applicable**

**Refugia:** There are no residual habitats within these areas. **Not Applicable**

**Width/Depth Ratio:** There are no residual habitats within these areas. **Not Applicable**

**Streambank Condition:** These areas mimic upland areas in terms of management and condition. **Not Applicable**

**Floodplain Connectivity:** The canyon topography of much of the lower river drainages maintains a strict connection between floodplain and channel. Since flows occur usually at flood periods in these areas the drainage area is synonymous with the floodplain. **Properly Functioning/Not Applicable**

**Changes in Peak/Base Flows:** The nature of the lower section of the drainage, topography and seasonal conditions has not changed drastically over time. **Not Applicable**

**Increases in Drainage Network:** Roads have not increased the drainage network within the watershed. Most roads created in the area follow drainages already. There has probably been some increase in sediment due to road placement, but the drainage network itself has not increased. **Properly Functioning**

**Road Density and Location:** Many roads within the basin are along drainage areas; however, there is a fairly low density of road within the area to begin with. Access to the river corridor is very limited via road. **At Risk**

**Disturbance History:** BLM harvest of timbered land parcels within the lower John Day Basin is minimal. **Properly Functioning/Not Applicable**

**Riparian Reserves:** To characterize this habitat indicator, an assessment of the potential riparian sites on public lands would have to be done. No such assessment has been made. **Not Applicable**

#### **4. Segment 4: Service Creek to Dayville**

##### **a. Location and Characteristics**

This river segment lies between the Service Creek/John Day River confluence and the South Fork/mainstem John Day River confluence near Dayville. There are some tourist facilities and two developed public campgrounds. The John Day Fossil Beds National Monument called Sheep Rock Unit is located in this segment. Oregon State Highway 19 and U.S. Highway 26 are located beside the river in this segment. This area is rural with some cultivated fields near the river and high rugged hills off the river, often covered with juniper trees.

The North Fork/mainstem John Day River confluence occurs near the middle of this segment at Kimberly, Oregon. This confluence marks a significant change in the character of the mainstem. From this point downstream, the river often contains enough water to sustain boating during the spring and early summer. From this point upstream, the river rarely contains enough water for boating.

##### **b. Water Quantity and Quality**

In 1996, the portion of Segment 4 between Service Creek and the North Fork John Day River confluence was placed on the ODEQ 303(d) list for exceeding state criteria for summer water temperatures. The part of Segment 4 from the North Fork John Day River confluence to Dayville was listed on the ODEQ 303(d) list for exceeding state criteria for dissolved oxygen, fecal coliform, flow modification, and summer water temperature.

The hydrologic features of this segment are similar to those in Segment 3. The gauging station at Service Creek is the primary source of flow data for this segment. Extremes for the period of record range from a maximum discharge of 40,200 cfs, to a minimum discharge of 6.0 cfs with a mean annual discharge of 1,960 cfs. Over 70% of the annual runoff occurs from March to June, with peak runoff recorded for April or May (OWRD 1986). Major tributaries entering this segment below Kimberly are: Alder Creek, Kahler Creek, Bologna Creek, Horseshoe Creek, and Parrish Creek. Rock Creek, Holmes Creek, Branson Creek, Dick Creek, and Cottonwood Creek feed this segment above Kimberly.

Water quality in this segment is strongly influenced by discharges from the North, Middle, and South Forks of the John Day River. Turbidity, erosion, and sedimentation occur during high flows. High water temperature and low dissolved oxygen occur during the low flow periods.

This segment drains a watershed that is about 1,680 square miles. A gauging station located at Picture Gorge has been operable for 61 years. Discharge has ranged from a maximum of 8,170 cfs on December 22, 1964, to a minimum of 1.0 cfs in August and September, 1930.

Over 76 percent of annual runoff occurs between February and June, with less than one percent of annual runoff occurring during August. Mean annual flow is 503 cfs. Streams in the subbasin typically stop flowing in the late summer and fall. For example, flows have ceased on Mountain Creek, a tributary to Rock Creek, in 7 out of 13 years (OWRD 1986).

Sedimentation and high water temperature continue to be the water quality parameters that may threatening fish populations in this segment (OWRD 1986).

### **c. Fisheries**

The river in this segment is generally wide and shallow, with flow and water quality low for anadromous salmonid growth parameters and survival. Specifically, water temperature typically exceed optimum ranges for anadromous salmonid rearing. Good riparian conditions and instream structure are lacking, which limits food production, spawning success, and rearing survival. This segment serves primarily as a migration corridor for spring chinook and summer steelhead. About 18% of the John Day River spring chinook, as well as 23% of summer steelhead, are produced in subbasins upstream from this segment. Resident populations of rainbow trout, smallmouth bass, and channel catfish exist in this segment. The smallmouth bass production is not as great as downstream areas, due to less favorable habitat conditions, such as water temperatures and low flows. Winter migratory bull trout have also been document down to Spray. These fish are assumed to be migrants from the North Fork of the John Day River population. The mainstem river between Spray and Kimberly is a winter migratory corridor for bull trout.

### **d. Vegetation**

The precipitation in this segment varies by location. The portion from Service Creek to Spray receives an average of 12 to 24 inches annually; and Spray to Dayville receives 10 to 12 inches, as described in ICBEMP (Quigley and Arbelbide 1997). The river elevation rises from 1,640 feet to 2,340 feet above sea level, and the canyon walls rise to 3,700 feet above sea level. Most upland soils are stony and well drained, and the hill slopes tend to be steep (40 - 80%), with the steepest slopes occurring in the Picture Gorge area (60 - 90%).

This segment is entirely within the Lava Plains ecoregion (Oregon Biodiversity Project 1998). Upland plant communities have been described in ICBEMP as “dry shrub” and “cool shrub” (Quigley and Arbelbide 1997). The most common noxious weed species are diffuse, Russian and spotted knapweeds, yellow starthistle, and isolated patches of purple loosestrife.

The riparian plant communities are dominated by sedge and rush species, with groups of Siberian elm, ponderosa pine, clumps of willow and mockorange, clematis and reed canary grass. Upstream from Kimberly, cottonwoods and agricultural fields increase in number.

The only special status species known to occur in this river segment is arrowleaf thelypody. Species suspected to occur in the segment are porcupine sedge, Torrey's rush, hepatic monkeyflower and Columbia cress.

A Proper Functioning Condition Assessment was completed for Segment 4 in 1997 (USDI-BLM 1993,1998c). The segment was divided into two sections. The functional rating for the section from Service Creek to Kimberly was "functional-at risk," meaning the riparian zone is in a functional condition, but susceptible to degradation from significant natural events or excessive human-caused influences. The trend rating was "upward," which means the riparian area is improving in overall condition. The assessment found the riparian vegetation lacked in diverse age-class distribution and composition of vegetation. Plant species that indicate good riparian, soil-moisture-holding characteristics were well represented, but lacked continuity throughout the segment to rate this characteristic fully functional. The vegetation that produces root masses capable of withstanding high flows was rated as "functional." However, there was a lack of vegetation cover present to protect banks and to dissipate flow energy during high water events. The observed riparian vegetation did not exhibit the high plant vigor necessary for a functional rating. In addition, the assessment indicated this part of the segment would benefit from the presence of large woody material to capture bedload, help develop floodplains, and dissipate energy during high water. The material was not present, however, in sufficient quantities to be beneficial, and the riparian area was not an adequate source of this material for the near future. A PFC assessment is not designed to identify the past causes of functional deficiencies in riparian areas, but to ascertain present functionality of the interaction among geology, soil, water, and vegetation. A particular rating is a product of human-caused influences (such as grazing and mining) and natural forces. In addition, the extent of future recovery hinges on management practices and ecological site potentials.

The functional rating for the section from Kimberly to Dayville, was "functional-at risk." The trend, however, was "not apparent," which means it could not be determined if functionality of the riparian zone is improving or declining. The assessment rating found riparian vegetation on the borderline, between lacking and not lacking in diverse age-class distribution and composition of vegetation. The same borderline rating existed between plant species that indicate good riparian, soil-moisture-holding characteristics and vegetation that produces root masses capable of withstanding high flows. There was adequate vegetation cover to protect banks and to dissipate flow energy during high water events, and the riparian vegetation exhibited high plant vigor. Large woody material was not present in sufficient quantities to be beneficial.

#### **e. Agriculture**

Agriculture traditionally has been the principal industry of this river segment. Cultivated fields are common on private lands along this segment. They are used primarily for growing hay and are irrigated by water from the John Day River.

#### **f. Grazing**

There are 21 BLM-administered grazing allotments along river Segment 4.

#### **h. Recreation**

Recreation opportunities available in this segment include driving for pleasure, dispersed and developed camping, picnicking, fishing, boating, hunting, wildlife viewing, swimming, tubing, and nature study. Public access is available at numerous locations along State Highway 19 and U.S. Highway 26, although many of these public tracts are not marked on the ground. Boating is feasible below Kimberly, and boating access is available at the Muleshoe Recreation Site, the “wooden bridge” (RM162), Shady Grove Recreation Site, a highway right-of-way at the Kimberly Bridge, and from a private launch in Spray. Many visitors are attracted to the Sheep Rock Unit of the John Day Fossil Beds National Monument. The river in this segment is characterized by mostly calm water with occasional riffles and Class I rapids.

Boating use in this segment consists mostly of day trips of varying lengths and locations between Kimberly and Service Creek. Although information collected from boater registration stations is not complete in this segment due to the many possible launch points, 55 groups registered in 1998, accounting for 284 boating use days. Motorized use is permitted on Segment 4, although no motorized use days were registered.

Bank and boat fishing are popular for both smallmouth bass and steelhead, as is hunting for chukar and deer. Some hiking occurs in the John Day Fossil Beds National Monument, but no other public hiking trails are present in this segment. Areas in the vicinity of the John Day Fossil Beds National Monument contain outstanding fossils of national and international significance. Collection of vertebrate fossils on public lands is not permitted, but visitors can still enjoy the experience of exploring for and viewing these glimpses of the past.

Developed camping is available at the Muleshoe Recreation Site, located two miles east of Service Creek. Facilities at this location include picnic tables, campfire grates, vault toilets, a bulletin board, a primitive boat launch, and a boater registration station. A day use area is available at the Shady Grove Recreation Site, about five miles east of Spray, and includes a picnic table, vault toilets, and a primitive boat launch. A private recreation site at the John Day River Bridge in Spray allows boat launching for a fee and includes a boater registration station. Developed recreation sites managed by the NPS and BLM are popular and well used, as are many of the undeveloped sites on public land.

An inventory of dispersed river campsites has not been completed for this segment, since it is primarily used for day trips. However, it is estimated that there are 36 undeveloped areas along the river that could be used for camping, 16 of which are on public land.



Commercial permittees reported 13 trips on Segment 4 in 1998, accounting for 123 boating use days. These occurred primarily in August and September, when low water levels make it time consuming to negotiate long sections of river as in Segments 2 and 3.

#### **i. Access**

State Highway 19 parallels the river in this segment, from Service Creek until it meets U.S. Highway 26. U.S. Highway 26 parallels the river for five miles to the end of the segment at Dayville. This river segment intersects several public land parcels, including over four miles of NPS land within the Sheep Rock Unit of the John Day Fossil Beds National Monument. Public boat access is available at the Muleshoe Recreation Site, at the “wooden bridge” at RM 162 (undeveloped), at the Shady Grove Recreation Site, and at the Kimberly Bridge. River access is available from private land for a fee at the John Day River Bridge in Spray.

Table 18 lists the ephemeral, intermittent and perennial streams within Segment 4 that contain or may have downstream effects on listed steelhead or their critical habitat. Segment 4 contains winter migratory bull trout habitat between Spray and Kimberly.

Table 18. - Stream miles of summer steelhead habitat within Segment 4 from Service Creek to Dayville. Steelhead habitat was taken from the ODFW ORIS database (1994). Potential steelhead habitat was determined using professional judgement.

<b>Stream Name</b>	<b>BLM Miles</b>	<b>Tributary to</b>	<b>Flow Regime</b>	<b>Steelhead Waters</b>
Harper Creek	0.1	John Day River	Intermittent	None
Horseshoe Creek	0.18	John Day River	Perennial	Spawning/Rearing
John Day River	10.0	Columbia River	River/Perennial	Migratory
Masiker Creek	0.25	John Day River	Intermittent	None
Mathas Creek	0.1	John Day River	Intermittent	None

## **Description of Ratings of Baseline Indicators for Horseshoe Creek in the Lower John Day River Segment 4 from Service Creek to Dayville.**

**Water Temperature:** Water temperature typically exceeds state DEQ water quality threshold of 64°. This stream provides spawning and rearing for steelhead. **Not Properly Functioning**

**Sediment/Turbidity:** Sediment seems to be transported through this system during high flows. Sediment buildup appears to be occurring in many stream segments associated with hydrophytic plant populations, especially willow species. Dominant substrate is gravel/cobble/ sand. Early spring runoff produces moderate to high turbidity in this stream. **Not Properly Functioning**

**Chemical Contamination/Nutrients:** There are no known chemical contaminants in this area. **Properly Functioning**

**Physical Barriers:** There are no known barriers in this stream. **Properly Functioning**

**Substrate:** Substrate is dominated by gravel/cobble with fines. Embeddedness is moderately high with fine sediment evident within the stream channel. **At Risk**

**Large Wood:** Large wood in these perennial streams historically played a larger role in pool formation, stream shade, and streambank stability than currently. Historic land use practices have adversely affected new recruitments, flood events have physically removed mature trees (cottonwoods, alders, willows, birch, and other species), or segregated overstory trees from water tables as stream reaches experienced downcutting. With improving grazing practices, trees and shrubs are currently increasing along most of these reaches, but it will be years before large wood recruitment to stream channels occurs at a measurable rate. Based on direct observations, current condition is **Not Properly Functioning**

**Pool Frequency:** Pool frequencies standards are not met in this stream. Many of this stream's reaches are improving in condition. As riparian conditions improve, pool frequencies are expected to increase. **Not Properly Functioning**

**Pool Quality:** Pool condition and quality is increasing in this stream area. Increased bank stability, as well as large boulder/bedrock features provide for depth and cover in many areas. Condition is on an upward trend. **At Risk**

**Off-Channel Habitat:** Off channel habitats are being developed as this stream develops and rebuilds floodplains. Beaver presence has also led to an increase in these habitats. **At Risk**

**Refugia:** Refugia are present in this area with increasing frequency. As stream conditions continue to improve these areas will become more connected and functional. **At Risk**

**Width/Depth Ratio:** Increase in healthy riparian vegetation has led to a narrowing of the stream channel in most areas and therefore a decrease in the width to depth ratio. **At Risk**

**Streambank Condition:** Streambanks in many areas show evidence of downcutting. Changed grazing management on public land in the last 8 years has shown an increase in vegetation along the stream and a subsequent increase in floodplain area as well as sinuosity. Streambanks have improved with increases in riparian vegetation and root structure increase. Conditions are **Not Properly Functioning**

**Floodplain Connectivity:** This stream has historically had significant down cutting of its channel. Changes in grazing management have led to increased riparian vegetation, bank stability, and floodplain area. High flows have then led to a widening of stream bottom which has served to reestablish new floodplains in many areas. **At Risk**

**Changes in Peak/Base Flows:** Improvements in riparian vegetation and bank structure in recent years may be increasing base flows in this stream. This is still speculative, however. **At Risk**

**Increases in Drainage Network:** Roads have not increased the drainage network within the watershed. There has probably been some increase in sediment due to road placement, but the drainage network itself probably has not increased. **Properly Functioning**

**Road Density and Location:** Road densities are low, with some valley bottom roads. **At Risk**

**Disturbance History:** BLM timber harvest of forested parcels within the lower John Day Basin is minimal. **Properly Functioning/Not Applicable**

**Riparian Reserves:** To characterize this habitat indicator, an assessment of the potential riparian sites on public lands would have to be done. No such assessment has been made. Riparian areas within these stream areas are increasing in response to grazing management. Connectivity between high quality riparian areas is also increasing. **Not Applicable**



**Description of Ratings of Baseline Indicators for intermittent drainages in the Lower John Day River Segment 4 from Service Creek to Dayville . These include: Harper, Masiker and Mathas Creeks.**

Generally streams within this category have very similar habitat components in varying amounts. These drainages are all characterized by similar habitat types including: seasonal/intermittent stretches of broad, channel, gravel/cobble substrate with little riparian vegetation, interspersed with areas of perennial stream usually associated with bedrock features, gravel/cobble substrate and presence of riparian vegetation. The difference in these types of habitat is typically the presence or absence of perennial reaches and residual pools where juvenile steelhead spend the summer.

**Water Temperature:** Water temperature typically exceeds state DEQ water quality threshold of 64° but does not exceed lethal limits for juvenile steelhead. This is due in large part to association between residual pools and water table. **Not Properly Functioning**

**Sediment/Turbidity:** Sediment seems to be transported through these systems during high flows. Sediment buildup does not appear to be occurring. **Properly Functioning**

**Chemical Contamination/Nutrients:** There are no known chemical contaminants in these areas. **Properly Functioning**

**Physical Barriers:** The physical barriers associated with these streams include the characteristic intermittent or ephemeral nature of the flow regime near the mouth of these tributaries. The lower section of these streams typically only flow during high spring runoff events, allowing a narrow margin for steelhead adults to move up into the drainage or juvenile steelhead to move downstream out of the basin. There is no known steelhead use in these streams however. **Not Applicable**

**Substrate:** Substrate is dominated by gravel/cobble/boulder, and fines are not excessive in the substrate. **Properly Functioning**

**Large Wood:** Large wood in the Lower John Day River basin, with its narrow canyon walls and marked lack of recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

**Pool Frequency:** Residual pools in perennial sections of these streams do not meet pool frequency standards. The nature of intermittent streams dictates that most scour pools will dry up, diminishing available rearing habitat. There is no known steelhead use in these streams however. **Not Applicable**

**Pool Quality:** Residual pools are in good condition, usually deep, and associated with cool ground water sources. **Properly Functioning**

**Off-Channel Habitat:** There are no residual off channel habitats within these areas, for most of the channel is dry. **Not Applicable**

**Refugia:** Refugia is limited to existing residual pool habitats within these streams. There is no known steelhead use in these streams however. **Not Applicable**

**Width/Depth Ratio:** There is a lack of wetted stream channel during rearing periods. Available rearing habitat is dominated by isolated residual pools or short reaches, that often are not linked by surface flows. **Not Applicable**

**Streambank Condition:** Areas with residual summer habitat are characterized by moister ground conditions and higher presence of hydrophytic plant species. **Properly Functioning**

**Floodplain Connectivity:** Professional judgement rates this indicator as **At Risk**, based on the lack to stability in these systems.

**Changes in Peak/Base Flows:** Improvements in riparian vegetation and bank structure in recent years may be increasing duration that these streams flow water into the summer. This is still speculative, however. **At Risk**

**Increases in Drainage Network:** Roads have not increased the drainage network within the watershed. Most roads created in the area follow drainages already. There has probably been some increase in sediment due to road placement, but the drainage network itself has not increased. **Properly Functioning**

**Road Density and Location:** Many roads within the basin are along drainage areas; however, there is a fairly low density of road within the area to begin with. **At Risk**

**Disturbance History:** BLM timber harvest of forested land parcels within the lower John Day Basin is minimal. **Properly Functioning/Not Applicable**

**Riparian Reserves:** To characterize this habitat indicator, an assessment of the potential riparian sites on public lands would have to be done. No such assessment has been made. **Not Applicable**

**Description of Ratings of Baseline Indicators for the Mainstem Lower John Day River Corridor Segment 4 from Service Creek to Dayville.**

**Water Temperature:** At mouth, summer values exceeded Oregon DEQ standard of 64°F each year between 1986-1995 with a maximum of 83°F. ODFW notes that water temperatures provide a sufficient thermal barrier in the lower river which discourages fish migration until water temperatures drop to suitable ranges typically beginning September to October. Fish therefore use this habitat as migratory only when temperatures coincide with tolerance levels. **Not Applicable or At Risk**

**Sediment/Turbidity:** The John Day River transports some volume of sediment every year. Consistent sources of sediment occur along the rivers edge including many agricultural fields which lose portions next to the river on a frequent basis. **At Risk**

**Chemical Contamination/Nutrients:** There are no known chemical contaminants in these areas. **Properly Functioning**

**Physical Barriers:** There are no physical barriers such as dams or falls within the section of the watershed. **Properly Functioning**

**Substrate:** There are sources of sediment within the basin; however, sediment buildup within the gravels of the stream channel is not a problem. The dominant substrate is cobble and gravel. There is no spawning or rearing habitat in this reach of the river. **Not Applicable**

**Large Wood:** Large wood in the Lower John Day River, with its narrow canyon walls and marked lack of recruitment trees, does not appear to have played a major role in channel formation and fisheries habitat. **Not Applicable**

**Pool Frequency:** Pools in river are associated with lateral scour and bends in the river corridor. **Properly Functioning**

**Pool Quality:** Lateral scour nature of mainstem pools maintains pools in a fairly static condition year to year. **Properly Functioning**

**Off-Channel Habitat:** This is a minor component for fish habitat within the lower river. Migrating steelhead key to the river thalweg, particularly juveniles. During summer months steelhead do not inhabit this lower mainstem section of the river. **Not Applicable**

**Refugia:** Migratory travel corridor habitat only **Not Applicable**

**Width/Depth Ratio:** The Lower John Day River is a system in which water volume fluctuates significantly from season to season. High flows in excess of 10,000 cfs regularly occur in winter to spring runoff times, while summer flows of less than 100 cfs occur in some stretches of the lower river. The bank controlling factors for the lower river are predominantly steep canyon walls, interspersed

with broader floodplain valleys. Width to Depth ratios are most likely consistent with standards given the channel controlling factors evident in the basin. **Properly Functioning**

**Streambank Condition:** The nature of the lower river is a narrow canyon between steep canyon walls interspersed with broader floodplain/agricultural areas. In many instances banks are composed of steep bedrock. Many other areas are characterized by large cobble/small boulder streambanks that are increasing with regard to willow presence and health. Most of the streambank within the lower basin are stable. However, areas associated with wide valley bottom and fine alluvium bank material show signs of erosion. **At Risk**

**Floodplain Connectivity:** The canyon topography of much of the lower river maintains a connection between floodplain and river channel. Areas characterized by broader floodplains are inundated only by the river in times of excessive flow. **At Risk**

**Changes in Peak/Base Flows:** Any changes to peak/base flows in the lower John Day River corridor, are likely the result of cumulative effects of land management practices within the entire drainage area. Gauging station data shows that since flows have been monitored on the Lower John Day River (1906-present), all flows over 25,000 CFS have occurred since 1965. Irrigation use alters base flows, most notably during the months of July-September. **At Risk**

**Increases in Drainage Network:** Roads near the river corridor are few and likely have not increased the drainage network. **Properly Functioning**

**Road Density and Location:** The mainstem John Day in this segment has a major highway which runs parallel to it. **At Risk**

**Disturbance History:** The lower John Day River corridor is not suitable conifer forest habitat. **Not Applicable**

**Riparian Reserves:** An assessment of the potential of the various riparian sites has not been made in the lower basin. However, riparian areas in certain areas are recovering as witnessed by increases in hydrophytic vegetation especially willows. **Not Applicable**



## **Description of bull trout habitat critical elements for Segment 4 - mainstem John Day River from Spray to Kimberly.**

**Habitat Access** - There are no known physical barriers to bull trout migration.

**Habitat Elements** - Large instream wood is rare to absent in this section of river. Riparian vegetation is lacking in most places and river flow fluctuates significantly between summer and winter. High water temperatures limit bull trout access to the winter season. The mainstem river has some off channel habitat areas and limited amounts of habitat refugia.

**Channel Condition/Dynamics** - No data is available on Wetted Width/Maximum Depth Ratios for the mainstem river. Based on informal observations, streambank conditions generally have 90 percent stability over 50-80 percent of any stream reach (Functioning at Risk). Streambank stability is primarily provided from rock, grasses, scattered deciduous shrubs and trees and pine trees. Off channel areas are probably frequently hydrologically linked to main channels in the mainstem river, based on informal observations.

**Flow/Hydrology** - Problems of the mainstem river are high volumes of runoff, low summer streamflows, and localized degraded water quality. Seasonal streamflows are unevenly distributed throughout the year. Some erosion and sedimentation problems occur in localized areas. Periodic high flows carry sediment and increase turbidity, affecting water quality and fish habitat (OWRD, 1986).

**Watershed Conditions** - There are many valley bottom roads, but road densities range from 1-2.4 miles/mi<sup>2</sup>. The BLM does not administer or maintain any roads within the area. Most of this area is non-forested. The level of disturbance history on private lands is largely unknown. It is estimated that riparian conservation areas (RHCA's) have experienced moderate to high losses of connectivity or function. Presently the riparian vegetation component along the mainstem river probably does not contribute largely to stream function. Conditions of RHCA's on tributary habitats is generally better however. Riparian areas are estimated to be >50% in similarity to natural community composition. Because the area is arid, resiliency of habitat to recover from environmental disturbances is moderate to low. Most scour events are localized.

**Integration of Species and Habitat Conditions** - There are no bull trout spawning habitats in the mainstem river. According to ODFW these populations associated with the North Fork are at "Moderate Risk" of extinction. Cumulative disruption of habitat from mining, timber harvesting, road building, and grazing, past opportunities for sport fishing overharvest, poaching, and hybridization and competition with brook trout has resulted in a declining trend in the

subpopulation size. Winter migratory habitat connects these spawning stream reaches and connectivity is likely during spawning season.

### **C. Baseline Conditions for the Upper John Day Subbasin 17070201.**

#### **1. Segment 5: Dayville to Headwaters.**

##### **a. Location and Characteristics**

Segment 5 lies between the South Fork/mainstem confluence and the mainstem headwaters in the Malheur National Forest. The John Day River originates in ponderosa pine-covered mountains and flows into the John Day Valley of grass and sagebrush, passing the towns of Prairie City, John Day, Mount Vernon, and Dayville. Livestock grazing and growing hay are the primary agricultural uses in this segment.

This segment and its tributaries comprise the upper mainstem John Day River subbasin, draining an area of approximately 1,070 square miles. Subbasin elevations start above 9,000 feet and drop to 2,230 feet, and range from forest and range land in the Blue Mountains to lower bench lands and irrigated valleys. Major tributaries to this segment include Dixie Creek, Strawberry Creek, Canyon Creek, and Beech Creek. The South Fork, a separate subbasin, marks the boundary between Segments 4 and 5.

##### **b. Energy and Minerals**

Mining is a common use in the upper portion of Segment 5. Placer mining occurs on Canyon Creek, upstream from the mouth, and there is potential for moderate-sized operations to mine the bench gravel. Most lode mines have ceased operation.

##### **c. Water Quantity and Quality**

Segment 5 and its tributaries contribute about 246,600 acre-feet annually to the John Day River system. Peak discharge from the subbasin generally occurs between March and early June, and the lowest flows occur during August and September.

Water quality tends to be “fair” in the upper subbasin during most of the year (Cude 2000). An exception is reported for the late summer months (approximately June through September) when water temperatures are elevated. Irrigation return flow is a major source of nutrient non-point source pollution. Cattle feedlots along the river could potentially be identified as point sources of pollution. Cattle

grazing, road building, and timber harvesting have altered the watershed by compacting soils and reducing vegetative cover, increasing soil erosion potential, decreasing precipitation infiltration and storage, and increasing runoff. The most developed area in the basin is the upper John Day River valley, from Dayville to Prairie City. There are no municipal sewage point source discharges to the streams of the subbasin, although Mount Vernon does have a discharge permit.

The part of Segment 5 from Dayville to Reynolds Creek was listed on the ODEQ 303(d) list as exceeding state criteria for dissolved oxygen, bacteria, flow modification, and summer water temperature. Some livestock feeding operations along the stream could be identified as point sources of pollution when reviewed by ODEQ. The rest of Segment 5 was listed for summer water temperatures for bull trout.

Water quality generally exhibits satisfactory chemical, physical, and biological quality. Higher than normal turbidity and temperatures occur in relation to high and low streamflows, respectively. Streams with low elevation headwaters are more likely to have elevated water temperatures. Depending on soils, geology, and land use, some tributaries exhibit erosion and sedimentation problems. High bacterial levels downstream from John Day threaten the use of the segment for swimming (OWRD 1986).

#### **d. Fisheries**

The most common anadromous fish in this segment are summer steelhead, spring chinook salmon, and Pacific lamprey. Resident fish include bull trout, rainbow (redband) trout, mountain white fish, and westslope cutthroat trout in tributaries.

Mining, road building, logging, livestock grazing, and other resource uses have contributed to stream sedimentation and turbidity, causing fish habitat to be degraded. Channelization of the river for agriculture and repair of the 1964 flood damage has reduced habitat diversity, causing a major reduction in fish habitat. Livestock grazing and road building also have contributed to a decrease in streamside shading, contributing to elevated summer stream temperatures that limit fish production, growth and distribution. The optimum water temperature for salmonid fish habitat in the John Day River is 55\_ F, with a maximum daily average temperature of 60\_ F. However, water temperatures average 68\_ F daily in normal years (years with normal to average climate and stream flow). Instream flows in August and September often are too low to support healthy fish populations. The BLM monitors water temperature in this segment at the National Forest boundary.

#### **e. Vegetation**

The precipitation in Segment 5 increases from 12 to 24 inches annually between Dayville and the Blue Mountain Hot Springs area. Beyond the hot springs, precipitation increases to greater than 24 inches as described in ICBEMP (Quigley and Arbelbide 1997). River elevation rises from 2,340 feet to around 5,800 feet above sea level at the headwaters. The majority of this segment consists of mountain foothills rising gradually (25 - 40%) from a broad valley bottom to elevations of 4,000 to 5,000 feet above sea level. Below

the Deardorff Creek area, the river generally flows through cultivated fields. Above Deardorff Creek, the canyon narrows and slopes become steeper (30 - 45%) with some slopes reaching 80%. Near the headwaters, the drainage narrows greatly and the surrounding slopes reach elevations of 7,000 feet or more. The soils are generally well drained, gravelly loamy sands and gravelly clay loams with slight erosion hazard.

The lower part of Segment 5 lies within the Lava Plains ecoregion, and the portion between Prairie City and the headwaters is in the Blue Mountains ecoregion (Oregon Biodiversity Project 1998). Upland plant communities have been described in ICBEMP as “dry shrub” and “cool shrub” (Quigley and Arbelbide 1997).

The wide meadows along this segment are historic floodplains, used primarily for agriculture and ranching activities. Much of the original riparian vegetation of cottonwoods and willows has been replaced by meadow grasses and alfalfa. Some areas along the river, such as Dayville and Prairie City, still retain large cottonwood and willow stands.

A Proper Functioning Condition Assessment was completed in 1997 (USDI-BLM 1993, 1998c). This assessment was limited to the portion of this segment from Dayville to John Day. The functional rating was “functional - at risk,” which means the riparian zone is in a functional condition, but susceptible to degradation from significant natural events or excessive man caused influences. The trend rating was “upward,” which means the riparian area is improving in overall condition. The assessment rating found the riparian vegetation on the borderline between lacking and not lacking in diverse age-class distribution and composition of vegetation. The same borderline rating existed between plant species that indicate good riparian, soil-moisture-holding characteristics and vegetation that produces root masses capable of withstanding high flows. There was adequate vegetation cover present to protect banks and to dissipate flow energy during high water events, and the riparian vegetation exhibited high plant vigor. The assessment indicated this part of the segment would benefit from the presence of large woody material to capture bedload, help develop floodplains, and dissipate energy during high water; however, the material was not present in sufficient quantities to be beneficial, and the riparian area was not an adequate source of this material for the near future. A PFC Assessment is not designed to identify the past causes of functional deficiencies in riparian areas, but to ascertain the present functionality of the interaction among geology, soil, water, and vegetation. A particular rating is a product of human-caused influences (such as grazing and mining) and natural forces. In addition, the extent of future recovery hinges on management practices and ecological site potentials.

#### **e. Agriculture and Grazing**

The private land along this segment is primarily used for livestock grazing and hay production. The few small scattered parcels of BLM-administered land in this segment are not located on the river, but are used primarily for livestock grazing. Lands in the uppermost portion of this segment on the National Forest are predominantly used for livestock grazing, timber harvest, and recreation.

There are three BLM-administered grazing allotments on Segment 5.

#### **f. Recreation**

Little public recreation occurs on this segment due to the lack of public land. Private lands offer some recreation opportunities such as hunting, fishing, gold panning, and swimming for friends and family of the landowners. Some hunting and fishing also may occur in the upper reaches, on the parcels of USFS land or within the state land parcel near Dayville. The OPRD operates Clyde Holliday State Park, located seven miles west of John Day on U.S. Highway 26. This park offers 30 campsites with electric hookups, restrooms and showers, a hiker/biker primitive camping area, dump station, and an 8-acre day use area with over a 0.25 mile of river frontage. The OPRD also manages the historical museum at Kam Wah Chung State Park in John Day.

#### **g. Access**

Public river access is limited in this segment due to the extensive private land adjacent to the river. U.S. Highway 26, however, follows the river for 53 miles from Prairie City to Dayville. Highway 26 intersects a small parcel of public land about seven miles east of Dayville (RM 220). The Clyde Holliday State Park provides limited access to the river. A paved county road follows the river through private land for 10 miles southeast of Prairie City before entering about 4 miles of mixed USFS and private lands. A paved USFS road (#14) follows the river to near the headwaters. This road and the river are mostly bordered by USFS land for 14 miles, but they do intersect a few parcels of private land.

Table 19 lists the ephemeral, intermittent and perennial streams within Segment 5 that contain or may have downstream effects on listed steelhead or their critical habitat. Segment 5 also contains winter migratory bull trout habitat upstream of John Day in the mainstem river.

Table 19. - Stream miles of summer steelhead habitat within Segment 5 from Service Creek to Dayville. Steelhead habitat was taken from the ODFW ORIS database (1994). Potential steelhead habitat was determined using professional judgement.

<b>Stream Name</b>	<b>BLM Miles</b>	<b>Tributary to</b>	<b>Flow Regime</b>	<b>Steelhead Waters</b>
Marks Creek	0.4	John Day River	Perennial	None

### **Description of Ratings of Baseline Indicators for Marks Creek in Segment 5 from Dayville to Headwaters.**

**Water Temperature:** Marks Creek has not been monitored for temperature. It likely exceeds the criteria of 64°F for migration and rearing habitat. **Not Properly Functioning**

**Sediment/Turbidity:** There is no sediment data for this stream. Turbidity generally is low to moderate. Professional judgement from direct observations would rate this stream as **At Risk**

**Chemical Contamination/Nutrients:** Nearly all reaches are above agriculture areas. No DEQ 303d listed reaches. Professional judgement would rate this stream as **Properly Functioning or At Risk**

**Physical Barriers:** There are no known man-made barriers for Marks Creek. **Properly Functioning**

**Substrate Embeddedness:** There is no substrate embeddedness data available for this creek. Professional judgement would put it in either the **At Risk or the Not Properly Functioning** category. This is due to direct observations of land management impacts on BLM and upstream private lands.

**Large Wood:** There is no quantified large wood data available for the creek listed for this matrix. Professional judgement would put it in the **Not Properly Functioning** category. This is due to the lack of instream wood observed.

**Pool Frequency:** Recent pool frequency data is not available for the creek listed for this matrix. Professional judgement would put it in the **Not Properly Functioning** category. This is based on direct observations made.

**Pool Quality:** There is no sediment data available for the creek listed for this matrix. Professional judgement would put it in either the **At Risk or the Not Properly Functioning** category, based on non-comprehensive observations made.

**Off-channel Habitat:** No information is available rate this stream. Based on direct observations, condition is rated as **At Risk**.

**Refugia:** Based on professional judgement this stream segment is not of sufficient length, size, number and connectivity to maintain viable populations or sub-populations or serve as refugia. This segment is among large portions of private lands, and not adjacent to other large stream segments on National Forest lands. **Not Properly Functioning**

**Wetted Width/Max Depth Ratio:** There is no current wetted width/max depth ratio data available for the creek listed for this matrix. Professional judgement would put it in the **Not Properly Functioning** category. This is due to the lack of stability of this systems and also direct observations made.

**Streambank Condition:** There is no current streambank condition data available for the creek listed for this matrix. From professional judgement and review of 1980 stream stability surveys, this stream is rated as **At Risk**.

**Floodplain Connectivity:** Little historic data exists showing the extent of wetlands and the frequency of overbank flows to compare to current conditions. Condition rated **At Risk**, based on direct observation and because of past management.

**Changes in Peak Flow/Base Flow:** There is little to no flow data available for the creek listed for this matrix. Professional judgement would put it in the **At Risk** category. This is due to the reduction of perennial grasses and riparian vegetation in some areas that has probably limited the ability of this watershed to dissipate energy and to store water. This could increase the peak flows on this systems, but would be difficult to measure.

**Drainage Network Increase:** Increases of the drainage network are generally limited to road interaction with streams. No data exists to show what changes may have occurred. Because some road fords occur through this stream, this condition is rated **At Risk**.

**Road Density and Location:** Estimated average road densities for all BLM lands are between 2-3 mi/mi<sup>2</sup>, with roads along most stream segments. **Functioning at Risk**

**Disturbance History:** Most BLM forested tracts have not had significant timber harvest, so past disturbance (% ECA) is less than 15%. Generally harvesting has not been concentrated in unstable or riparian areas. **Properly Functioning**

**Riparian Reserves:** To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**

## **Description of bull trout habitat critical elements for Segment 5 - mainstem John**

### **Day River upstream of John Day.**

**Water Quality** - Water quality in the subbasin generally exhibits satisfactory chemical, physical and biological quality except during periods of extremely high or low flows. Most streams exhibit higher than normal temperatures when flows are low and higher than normal turbidities during high flows. The upper mainstem JDR reflects the problems created in the tributaries as well as some specific to the river. Cattle feedlots along Dixie Creek (RM 4.3) and the mainstem John Day River (RM 255.5) have been identified as point sources of pollution (OWRD 1986).

In 1993 and 1995, water quality data was collected at RM 250 and 274 on the UJDR. The 7-day average maximum daily temperatures for the site at RM 250 was 23.8 C starting 8/8/93 and 24.4 C starting 8/6/95. The 7-day average maximum daily temperatures for the site at RM 274 was 13.6 C starting 8/6/93 and 13.9 C starting 7/27/95. Neither of these monitoring sites are located on BLM administered lands. According to Oregon Department of Environmental Quality (Oregon's 1998 Section 303(d) List of Water Quality Limited Waterbodies), the following streams in the analysis area are water quality limited for exceeding State water temperature standards:

- John Day River (From City of John Day to headwaters)
- Grub Creek (Mouth to headwaters)
- Pine Creek (Mouth to Bear Gulch)
- Indian Creek (Mouth to RM 3.0)
- Dads Creek (Mouth to headwaters)
- Dans Creek (Mouth to headwaters)
- Strawberry Creek (Mouth to Squaw Creek)
- Reynolds Creek (Mouth to Axe Gulch)

No information is available on percent fines in spawning habitats. Lower Reynolds Creek (private land) is the only stream in the analysis area that currently supports spawning/rearing habitat.

**Habitat Access** - No known physical barriers to bull trout migration are within the area.

**Habitat Elements** - Substrate embeddedness data has been collected on Little Pine Creek in November, 1998. Generally, embeddedness was <20 percent, but was >30 percent below a road ford, where sediments have washed and gullied down



the road into the stream. No other substrate embeddedness data is available on BLM managed stream segments in the area. Little Pine and Indian Creeks on BLM managed lands have good quantities of instream wood and potential future supplies of instream wood. This is assessed from informal observations, not quantified data. Stream survey data is not available to quantify pool frequencies and quality. The Indian Creek stream segment could likely serve as refugia. Although less than 0.5 miles in length, the reach has good water quality, habitat structure/complexity, streambank stability and is adjacent to the Strawberry Mountain Wilderness. Summer rearing/spawning bull trout habitat currently exists 0.5 miles above the BLM tract within the Wilderness. Little human activity has occurred in the riparian zone except for light to moderate grazing activities.

**Channel Condition/Dynamics** - No data is available on Wetted Width/Maximum Depth Ratios for the UJDR or its tributaries. Based on informal observations of Pine, Little Pine and Indian Creeks on BLM lands, streambank conditions generally have 90 percent stability over 50-80 percent of any stream reach (Functioning at Risk). Off channel areas are probably infrequently hydrologically linked to main channels in Pine and Little Pine Creeks, and frequently linked in Indian Creek, based on field observations.

**Flow/Hydrology** - The seasonal distribution of stream discharge for the UJDR follows the general John Day Basin pattern. Water quality is impaired during high and low flow periods. The major water quality conflicts relate to impacts on fishery resources (OWRD, 1986). Watershed conditions may have contributed to discharge variability. Disturbance of soils and vegetative cover by domestic and wild animal foraging, road building, and timber harvesting have altered the watershed. Soils have been compacted and vegetative cover has been reduced. This has the effect of increasing soil erosion potential, decreasing precipitation infiltration and ground water storage, and speeding runoff (OWRD, 1986). Low to moderate increases in active channel length have probably occurred in the area due to human caused disturbances, but data to quantify this and other flow/hydrology parameters on BLM managed lands is unavailable.

**Watershed Conditions** - Road densities are greater than 2.4 miles/mi<sup>2</sup> on BLM managed lands with some valley bottom roads. Little Pine, Pine, and Indian Creeks on BLM lands are forested parcels. The Little Pine Creek drainage has particularly high road densities, primarily constructed for past mining activities. Past and current off road vehicle use has created an extensive web of roads and trails in this drainage as well. The Grub Creek parcel is partially forested on the north facing slope adjacent to the stream. Most forested BLM tracts have not had significant timber harvest, so past disturbance (% ECA) is considered low.

Based on ocular assessments of BLM lands, riparian conservation areas (RHCA's) provide adequate shade, large wood recruitment, and habitat connectivity to support salmonid populations and provide good water quality to downstream migratory bull trout habitat in the JDR. Because the area is semi-arid, resiliency of habitat to recover from environmental disturbances is moderate to low.

**Integration of Species and Habitat Conditions** - Bull trout spawning subpopulations in the UJDR are connected within the subbasin (except upper Indian Creek) but not with other subpopulations in the John Day basin. Spawning habitats are primarily located upstream of the analysis area. Winter migratory habitat likely connects these spawning upper mainstem subpopulations with the Indian Creek subpopulation, but this connectivity is unlikely during spawning season. According to ODFW these UJDR subpopulations are in "Moderate Risk" of extinction. Cumulative disruption of habitat has resulted in a clear declining trend in the subpopulation size. ODFW survey crews in 1990-1992 found actual summer distribution for bull trout at about 25 percent of the suspected distribution (104 km out of 428 km of previously estimated distribution area).

**2. Segment 10: South Fork of the John Day River - Mainstem Confluence to County Highway 63.**

### **a. Location and Characteristics**

The South Fork flows northward from its headwaters in the Ochoco and Aldrich Mountains and drains an area of approximately 607 square miles, entering the mainstem John Day at Dayville. This 35-mile segment lies between the mainstem/South Fork John Day River confluence and County Highway 69B, near the community of Izee, Oregon. Most of the subbasin is located in Grant County.

This segment flows through a narrow canyon with high steep hillsides. The hillsides and riparian areas are forested, with frequent rock outcrops.

The South Fork road follows the river for the full length of this segment. It has an all-weather surface and is open year-round.

This river segment does not contain enough water for boating, but is popular for fishing, hunting and camping.

### **b. Water Quantity and Quality**

In this segment, the river flows from about 3,860 to about 2,300 feet above sea level. The gradient over the 60 mile course of the river is about 47 feet per mile. Murderers Creek, Black Canyon Creek, and Deer Creek are the major tributaries in Segment 10. Average annual discharge at the mouth is an estimated 100,000 acre-feet.

Subbasin discharge is greatest during the winter months. Discharge generally peaks in late April, coinciding with maximum snowmelt runoff, and is lowest in September. During the low flow period of July through October, the demands for irrigation, fish maintenance, and water quality are greatest.

Surface water quality in these segments is generally satisfactory for chemical, physical, and biological quality. The primary water quality concern for this segment is sediment loading which is elevated during periods of high flow. Conversely, elevated water temperature is characteristic of periods of low flow. High sediment loading occurs in association with storm runoff events and coincide with both spring thaw and summer thunderstorms. Timber removal, road construction, stream channel disturbance, improper livestock grazing, and natural conditions also contribute to sediment loading in the system.

Finally, moderately severe sheet, gully and streambank erosion in the headwater areas of the upper South Fork contribute to the high levels of sediment transport.

Water temperatures as high as 77 degrees F have been recorded in the South Fork subbasin near Izee. Elevated water temperatures are a resultant of low streamflows, lack of streamside shade and the broad shallow nature of the river. Improper livestock grazing, channelization, and application of herbicides to control noxious weeds in the upper watershed have reduced the vegetation needed for streambank stability and shading the water. High water temperatures are conducive to the growth of disease-causing bacteria.

As a result of high summer water temperatures, this segment is included in the ODEQ 303(d) list.

### **c. Fisheries**

Resident trout populations generate 3,000 to 5,000 angler user days annually, with a sport catch of up to 10,000 fish. Prior to 1994, wild rainbows were supplemented each year with stocking of legal-size and fingerling rainbows. Trout have not been stocked in the basin since 1994. Historically, the subbasin never supported a spring chinook population.

Fish resources in this segment are considered to be an outstandingly remarkable value by the BLM. Fish production in the South Fork is maintained by good water quality and habitat diversity, particularly in the middle reaches. Segment 10 fisheries values can be characterized into three reaches: the upper reach above Izee Falls, the middle reach within the canyon, and the lower reach below Smokey Creek. All three reaches exhibit good riparian vegetation and good fisheries habitat diversity. The reach above Izee Falls maintains good water quality and fisheries habitat for native trout. No anadromous habitat is present due to the impassable falls at river mile 27.5. Sunflower, Indian, Flat, Lewis, Corral, and Venator Creeks enter the South Fork above Izee Falls. These streams are important to the maintenance of wild trout populations in the subbasin. At times during the summer, this reach produces larger amounts of sediment from upland areas when local, intense thunderstorms occur over bare soils. No individual factor is solely responsible for producing conditions which lead to erosion and sediment loading. Soil types and geology, along with vegetative removal such as improper livestock grazing, timber removal, and road construction, have all contributed to the present situation. Sediment loading affects fish when deposition results in fine materials becoming embedded in spawning gravels and by filling pools used for rearing.

The middle reach between Smokey Creek and Izee Falls exhibits good water quality, fish habitat and riparian condition. This reach is characterized by a deep canyon which runs south to north, with vegetation ranging from ponderosa pine and juniper to willow and cottonwood. This reach is more confined than the lower reach due to the geology of the area. Several streams, such as Smokey, Wind, Black Canyon, Murderers and Deer Creeks, enter the South Fork along this stretch and provide additional habitat for resident and anadromous salmonids.

In the lower reaches of the subbasin below Smokey Creek, where the river leaves the strict confines of the canyon, the floodplain broadens. As a result, the stream channel widens and water temperatures increase. In this reach, farm practices and stream channel disturbance (dredge and fill activities) have affected fish habitat. Fish production declines in this stretch due to these factors. High water temperatures which deplete dissolved oxygen content become the most significant limiting factor to fish production and salmonid survival in this reach of the South Fork.

### **d. Vegetation**

In Segment 10, the average precipitation varies from 12 to 24 inches annually (Quigley and Arbelbide 1997). The river elevation rises from 2,300 feet, at the confluence with the mainstem, to 3,860 feet above sea level at the County Road 63 bridge. The canyon is narrow in this segment with

slopes (25 - 65%) rising to between 4,000 and 4,500 feet above sea level, the highest reaching around 5,900 feet.

This segment lies within two ecoregions. The section from the confluence to about RM 25 is in the Lava Plains ecoregion and from RM 25 to the County Road 63 bridge is in the Blue Mountains ecoregion (Oregon Biodiversity Project 1998). Upland plant communities have been described as “dry shrub” and “cool shrub” (Quigley and Arbelbide 1997).

The riparian plant communities are well represented with an overstory of coyote, Mckenzie and whiplash willows (USDI-BLM 1992b). Other woody riparian species include dogwood, alder, water birch, cottonwood, chokecherry and elderberry. Shrub and vine species are represented by syringa, clematis, rose, snowberry, gooseberry and poison ivy. The herb component contains horsetail, goldenrod, sweet clover, water hemlock, speedwell and thistle. Dominate along the segment is a sedge/rush group along with reed-canary grass and to a lesser extent, red top grass and Kentucky bluegrass.

In upland plant communities, scattered ponderosa pines dominate the overstory (USDI-BLM 1992b). Also present are Douglas fir, Western juniper and sagebrush. The grass portion contains tall wheatgrass, bluegrass, bluebunch wheatgrass, Great Basin wildrye, and cheatgrass.

One special status species is known to exist in Segment 10, milkvetch. Columbia cress and arrowleaf thelypody are suspected to occur in the segment.

A Proper Functioning Condition Assessment was completed in 1997 (USDI-BLM 1993, 1998c). The assessment rating was “Proper Functioning Condition” for the riparian zone. The trend rating was “upward”, which means the riparian area is still improving in it’s overall condition, even though it is presently functional. All seven components of the vegetative section of the assessment rated as functional. The vegetation had a diverse age-class distribution and composition of plants. The species present indicated good riparian soil moisture holding characteristics and production of root masses capable of withstanding high flows. In addition, there was adequate vegetation cover present to protect banks and dissipate flow energy during high water events and the riparian vegetation did exhibit high plant vigor. This segment benefits from the presence of large woody debris to capture bedload, help develop floodplains and dissipate energy during high water. The existing riparian plant communities are an adequate source of this material. A PFC Assessment is not designed to identify the past causes of riparian functional deficiencies, but to ascertain the present functionality of the interaction among geology, soil, water, and vegetation. A particular rating is a product of man-caused influences such as grazing and mining, and natural forces. In addition, the extent of future recovery hinges on management practices and ecological site potentials.

#### **e. Forestry**

Forest lands within the WSR boundaries are classified as commercial and generally suitable for forest harvest and management. Certain areas on the river, however, have been withdrawn from consideration for harvest. Timber harvest in the remainder of the corridor is subject to restrictions that protect scenery and water quality.

Forest management on the east side of the river is guided by a BLM forest management plan which outlines forest practices for the next 10 years. There are no planned forest management practices for lands within the river corridor.

Past timber management activities have had no long-term impacts to scenery, wildlife habitat or water quality. The timber east of the river and upstream from Izee Falls has been subjected to previous harvesting. Timber removal has been by partial cutting (removal of 50-70% of the overstory) and commercial thinning (removal of selected trees over 10 inches diameter breast height to a 24 to 36 feet spacing).

#### **f. Grazing**

Segment 10 has seven grazing allotments. One allotment (#4038) falls outside the designated portion of this segment. Public land acreage in allotments in this segment vary from 2,213 to 17,315 acres; public land forage varies from 600 to 2,000 AUMs. There are approximately 35 river miles (70 river bank miles), one half of which are on public land (state or federal).

Allotment evaluations have been completed on all but two allotments in this segment (#4124 and #4119). Grazing management changes have occurred on three of the seven allotments. The changes have been moving from primarily grazing during the warm season (late spring and summer), to cool season grazing (winter or early spring) or exclusion in some cases.

Photo points originally were established to monitor range conditions in the early 1980s. These photos and other vegetative inventory data show that grazing conditions along the river were poor in the early 1980s. Since that time, grazing management has been adjusted, and vegetative conditions have improved to fair or good and are continuing to improve. Grazing exclusion and restrictive grazing have met with great success in improving riparian vegetation on state-owned lands of the lower South Fork and Murderer's Creek also.

Current grazing management practices were judged by an interdisciplinary BLM team to be appropriate for protecting and enhancing river values on 100% (34.4 miles) of the public river bank miles in this segment.

#### **g. Recreation**

The South Fork John Day River offers the visitor excellent opportunities for sightseeing, camping, fishing, swimming, picnicking, hiking, and hunting. Other forms of dispersed recreation such as photography and wildlife watching also can be enjoyed by visitors. The South Fork Backcountry Byway offers opportunities for scenic drives and mountain biking. The river's rustic character provides the visitor with a feeling of isolation and remoteness despite its road accessibility. The Black Canyon Wilderness (USFS) provides hiking trails and back-packing opportunities. Cross-country hiking is available in the Aldrich Mountain WSA. The water flows in this segment are generally insufficient to support boating. The rugged geologic formations of the canyon offer excellent sightseeing opportunities.

At this time, there are no recreational developments along the river. However, there are 228 undeveloped sites that could be used for camping in Segment 10, 104 of which are on public land. Since many of these sites are located along the river edge, riparian vegetation is frequently impacted by recreational vehicles. Fishing trips are usually one-day in length, and camping and hunting trips during the summer and fall months are an estimated to be between two to four days in length. The BLM does not currently administer any commercial use permits within this segment.

The BLM is currently seeking to acquire several parcels of land adjacent to the river under the proposed Northeast Oregon Assembled Land Exchange. Acquisition of these lands would increase public recreation opportunities in this area.

#### **h. Access**

A county road follows the South Fork through approximately four miles of private land from Dayville upstream, then through six miles of mixed state and BLM land ownership. The road is maintained by the BLM from about RM 11 to the County Highway 69B junction. There is good access to the river for hiking, camping, and fishing on the public land portions.

Table 20 lists the ephemeral, intermittent and perennial streams within Segment 10 that contain or may have downstream effects on listed steelhead or their critical habitat.

Table 20. - Stream miles of summer steelhead habitat within Segment 10 from Service Creek to Dayville. Steelhead habitat was taken from the ODFW ORIS database (1994). Potential steelhead habitat was determined using professional judgement.

<b>Stream Name</b>	<b>BLM Miles</b>	<b>Tributary to</b>	<b>Flow Regime</b>	<b>Steelhead Waters</b>
S. Fk. John Day River	10.2	John Day River	Perennial	Spawning and Rearing
S. Fk. John Day River	4.7	John Day River	Perennial	No, access blocked by falls
Johnson Creek	0.25	SFJDR	Perennial	No
Oliver Creek	0.25	SFJDR	Perennial	No
Martin Creek	0.25	SFJDR	Ephemeral	No
Cougar Gulch	0.25	SFJDR	Ephemeral	Spawning and Rearing
Deer Creek	0.25	SFJDR	Perennial	Migratory
Sunflower Creek	0.25	Deer Creek	Perennial	No
Indian Creek	0.25	SFJDR	Perennial	No



**Description of Ratings of Baseline Indicators for Segment 10 including the South Fork John Day River and tributaries; Johnson, Oliver, Martin, Cougar Gulch, and Deer Creeks.**

**Water Temperature:** From data and professional judgment, most of the creeks in this matrix list are known or suspected to meet the criteria of 57°F for spawning, but not 64°F for summer rearing. Water temperatures have been monitored in the South Fork John Day River, Murderers and Deer Creeks. **At Risk**

**Sediment/Turbidity:** Percent surface fines data has been collected on Deer and Murderers Creeks. Turbidity is high, from direct observations, particularly on the South Fork John Day. Professional judgement from data and direct observations would rate these streams as **Not Properly Functioning**. High sediment loads are present in the SFJDR drainage during peak runoff and intense thunderstorms (OWRD, 1986). Livestock grazing, timber harvest/road construction, farm practices, stream channelization, and natural conditions have contributed to these conditions.

**Chemical Contamination/Nutrients:** The upper South Fork John Day River is dominated by private agriculture and grazing activities near the river, but water contamination levels is unknown. Tributary streams in this matrix are not influenced by agriculture activities. No DEQ 303d listed reaches. Professional judgement would rate these streams as **At Risk**

**Physical Barriers:** There are no known physical barriers in these streams. **Functioning**

**Substrate Embeddedness:** There is little substrate embeddedness data available for these streams. Professional judgement would rate them as **Not Properly Functioning**. This is due to direct observations and high turbidity levels in the South Fork.

**Large Wood:** There is no quantified large wood data for these streams. Professional judgement would rate them as **Not Properly Functioning**. This rating based on professional judgement from direct observations. Several stream segments are not in forested areas, and may not have potential to reach this criteria range.

**Pool Frequency:** Based on direct observations of these streams, pool frequency would be considered **Not Properly Functioning**.

**Pool Quality:** Deep pools are fairly common, generally with adequate cover, but are moderately reduced by fine sediments, especially in the SF John Day River. Professional judgement from direct observations would rate these streams as **At Risk**.

**Off-Channel Habitat:** Based on direct observations of some backwater areas and professional judgement, this is rated **At Risk**.

**Refugia:** Many of these streams segments could be potential habitat refugia. However, upstream influences (particularly on the South Fork John Day) are affecting stream temperatures and turbidity/sediment levels, which is limiting habitat potential. Riparian reserves are fairly intact, and generally improving. Professional judgement would rate the stream segments as **At Risk**

**Wetted Width/Max Depth Ratio:** There is no current width to depth ratio data available for these streams. Professional judgment from direct observations would rate them as **At Risk**.

**Streambank Condition:** Based on review of 1980 and 1989 riparian inventories, long term monitoring studies and direct observations, most streams appear to be **Properly Functioning**.

**Floodplain Connectivity:** Past road building, grazing, and logging activities along these streams has reduced the linkage of wetlands, floodplains, and riparian areas from main channels. Condition rated **At Risk**, from direct observation and professional judgment.

**Changes in Peak Flow/Base Flow:** Flow data has been collected on the South Fork John Day, Murderers Creek and Deer Creek. Past grazing activities have probably limited the ability of these watersheds to dissipate energy and store water. Upland conditions are generally improving now. Professional judgement estimates condition as **At Risk**.

**Drainage Network Increase:** Increases of the drainage network are generally limited to road interaction with streams. Based on roads commonly adjacent to streams and some road fords, this condition is rated **At Risk**.

**Road Density and Location:** Estimated average road densities for all BLM lands are less than 2 mi/mi<sup>2</sup>, but valley bottom roads are common. **Functioning at Risk or Not Functioning Properly**

**Disturbance History:** Most BLM forested tracts have not had significant timber harvest, so past disturbance (% ECA) is less than 15%. **Properly Functioning**

**Riparian Reserves:** To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**

**Description of Ratings of Baseline Indicators for Segment 10 including the South Fork John Day River and tributaries; Sunflower, and Indian Creeks.** Streams in this list are upstream of a natural barrier to steelhead trout (Izee Falls on the SF John Day River), and are occupied by redband trout and non-game species only.

**Water Temperature:** Streams in this list are upstream of natural barrier to steelhead. Water temperatures have been monitored in the SF John Day River, Indian, and Sunflower Creeks. **Not Properly Functioning**

**Sediment/Turbidity:** There is no sediment data available for the creeks listed for this matrix. Professional judgement would put it in either the **At Risk or Not Properly Functioning** category. This is due to the direct observations made.

**Chemical Contamination/Nutrients:** There is no chemical or nutrient data available for the creeks listed for this matrix. Professional judgement would put it in the **At Risk** category.

**Physical Barriers:** Streams in this list are upstream of natural barrier to steelhead. **Not Applicable**

**Substrate Embeddedness:** There is no substrate embeddedness data available for the creeks listed for this matrix. Professional judgement would put it in either the **At Risk or Not Properly Functioning** category. This is due to direct observations and high turbidity levels in the South Fork.

**Large Wood:** There is no large wood data available for the creeks listed for this matrix. Professional judgement would put it in the **Not Properly Functioning** category. This is due to the lack of instream wood observed.

**Pool Frequency:** There is no current pool frequency data available for the creeks listed for this matrix. Professional judgement would put it in the **Not Properly Functioning** category. This is because it does not meet the pool frequency standards.

**Pool Quality:** There is no sediment data available for the creeks listed for this matrix. Professional judgement would rate this condition as **At Risk**. This is due to direct observation of volume reduction by fine sediments.

**Off-channel Habitat:** Based on direct observations of some backwater areas and professional judgement, this is rated **At Risk**.

**Refugia:** Streams in this list are upstream of natural barrier to steelhead. **Not Applicable**

**Wetted Width/Max Depth Ratio:** There is no current wetted width/max depth ratio data available for the creeks listed for this matrix. Professional judgement would put it in the **At Risk** category.

**Streambank Condition:** There is no current streambank condition data available for the creeks listed for this matrix. Professional judgement, direct observations, and review of riparian habitat inventories would categorize it as **At Risk**.

**Floodplain Connectivity:** Although little historic data exists showing the extent of wetlands and the frequency of overbank flows to compare to current conditions. Professional judgement would put it in to the **Properly Functioning to Functioning at Risk** category. This is due to the fair stability of these systems.

**Changes in Peak Flow/Base Flow:** Flow data has been collected on the South Fork John Day River. Past grazing activities have probably limited the ability of these watersheds to dissipate energy and store water. Upland conditions are generally improving now. Professional judgement estimates condition as **At Risk**.

**Drainage Network Increase:** Increases of the drainage network are generally limited to road interaction with streams. Based on roads commonly adjacent to streams and some road fords, this condition is rated **At Risk**.

**Road Density and Location:** Road densities are less than 3 mi/mi<sup>2</sup> with some valley bottom roads. **Functioning at Risk**.

**Disturbance History:** Most BLM forested tracts have not had significant timber harvest, so past disturbance (% ECA) is less than 15%. **Properly Functioning**

**Riparian Reserves:** To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these stream segments. **Not Applicable**

### **3. Segment 11: South Fork - County Highway 63 to Headwaters**

#### **a. Location and Characteristics**

This river segment extends about 24 miles from County Highway 69B to the headwaters. It differs from Segment 10 in that it is not contained in a narrow canyon and the stream character is normally slow, wide, and shallow, with little riparian vegetation present from the National Forest boundary to County Highway 69B.

This is a rural, agricultural area where the paved County Highway 69B follows the river upstream for about nine miles. At that point, a good gravel road follows the river for another eight miles to the National Forest boundary and continues into the forest. Approximately seven miles of the South Fork headwaters flow through land managed by the USFS.

Some private pastures along the river are used as winter feed lots for livestock. These areas are devoid of vegetation and are likely to contribute sediment and other pollutants into the river as the result of overland runoff.

#### **b. Water Quantity and Quality**

See Segment 10 for Water Quantity and Quality on the South Fork John Day River.

Headwater areas of the upper South Fork have severe to moderately severe sheet, gully and streambank erosion, with resultant high levels of sediment transport. The most severe problems are in the Lewis Creek, Corral Creek, and Flat Creek areas.

#### **c. Fisheries**

See Segment 10 for fisheries discussion of entire South Fork John Day River.

#### **d. Vegetation**

The average annual precipitation in this segment varies from about 12 inches at the lower elevations, to above 24 inches at the higher elevations (Quigley and Arbelbide 1997). The river elevation ranges from approximately 5,200 feet above sea level at the headwaters, to 3,860 feet at the County Highway 69B bridge. The canyon bottom averages over 1,300 feet in width until the juncture with Donovan Creek, where it narrows considerably. The slopes at the lower end of this segment are mostly moderate (10% to 30%) and rise to between 4,500 and 5,000 above sea level. However, above Donovan Creek, the slopes become steeper (20% - 60%) and rise to about 5,600 feet above sea level.

This segment lies almost entirely in the Blue Mountains ecoregion, although the section between Antelope and Venator Creeks lies within the Lava Plains ecoregion (Oregon Biodiversity Project 1998). Upland plant communities have been described as “dry shrub” and “cool shrub” in ICBEMP (Quigley and Arbelbide 1997).

The river flows primarily through agricultural fields from County Road 63 bridge to Donovan Creek.

Most of the natural riparian vegetation has been replaced by pasture grasses. Much of the segment has either downcut below the original floodplain or been channelized by mechanical means. Little of the historic riparian vegetation is present, although willows can be found. From Donovan Creek to the headwaters, the river is within the Malheur National Forest. The Malheur National Forest has been conducting riparian inventories which will be released upon completion of their next forest plan. A Proper Functioning Condition Assessment has not been completed for this segment.

Three special status species are suspected to occur in this segment; Columbia cress, arrowleaf thelypody and milk vetch.

#### **e. Agriculture**

The WSR portion of this segment (below the National Forest) is used for livestock grazing. The lands along the river are almost totally privately owned. They provide an important location for local ranches to hold and feed their livestock over the winter months.

#### **f. Grazing**

Segment 11 contains five active grazing allotments and one that extends into Segment 10. Public land acreage by allotment in this segment varies from 2023 to 3637 acres and public land forage varies from 292 to 927 AUMs. There are approximately 24 river miles (48 river bank miles) in this segment, 1.4 river bank miles (3%) of which are public land.

No allotment evaluations have been completed on the five allotments, because a land exchange has slated these public lands for disposal.

#### **g. Recreation**

Outside the National Forest portion of this segment, public recreation opportunities are limited to driving for pleasure on the National Backcountry Byway. A lack of public land precludes hiking, fishing, and picnicking. Bicycling could be accommodated on the road. There is a total of 11 undeveloped campsites on this segment, only one of which is on public land. More public outdoor recreation opportunities are available in the National Forest portion of this segment. This area is not designated as a WSR, but the land along the river is open to public use. Water and riparian conditions in the National Forest are good, providing wildlife habitat and a pleasant outdoor recreation setting. The water flows in this segment are insufficient to support boating.

#### **h. Access**

The river is adjacent to paved County Highway 69B for approximately 10 miles. The county road changes to gravel and continues upstream along the South Fork to the USFS boundary, a distance of seven miles. These 17 miles of county road travel mostly through private ranch land and access to the river is limited. At the USFS boundary, the gravel road becomes USFS Road 47 for approximately eight miles. It continues along the South Fork to its headwaters, mostly on USFS land, where good public access to the river is available.

Table 21 lists the ephemeral, intermittent and perennial streams within Segment 11 that contain or may have downstream effects on listed steelhead or their critical habitat.

Table 21. - Stream miles of summer steelhead habitat within Segment 11 from Service Creek to Dayville. Steelhead habitat was taken from the ODFW ORIS database (1994). Potential steelhead habitat was determined using professional judgement.

<b>Stream Name</b>	<b>BLM Miles</b>	<b>Tributary to</b>	<b>Flow Regime</b>	<b>Steelhead Waters</b>
S. Fk. John Day River	0.5	John Day River	Perennial	No, access blocked by falls
Sock Hollow	0.2	SFJDR	Ephemeral	None



**Description of Ratings of Baseline Indicators for Segment 11 including the South Fork John Day River and Sock Hollow. Streams in this list are upstream of a natural barrier to steelhead trout (Izee Falls on the SF John Day River), and are occupied by redband trout and non-game species only.**

**Water Temperature:** Streams in this list are upstream of natural barrier to steelhead. Water temperatures have been monitored in the SF John Day River. **Not Properly Functioning**  
**Sediment/Turbidity:** There is no sediment data available for the creeks listed for this matrix. Professional judgement would put it in either the **At Risk or Not Properly Functioning** category. This is due to the direct observations made.

**Chemical Contamination/Nutrients:** There is no chemical or nutrient data available for the creeks listed for this matrix. Professional judgement would put it in the **At Risk** category.

**Physical Barriers:** Streams in this list are upstream of natural barrier to steelhead. **Not Applicable**

**Substrate Embeddedness:** There is no substrate embeddedness data available for the creeks listed for this matrix. Professional judgement would put it in either the **At Risk or Not Properly Functioning** category. This is due to direct observations and high turbidity levels in the South Fork.

**Large Wood:** There is no large wood data available for the creeks listed for this matrix. Professional judgement would put it in the **Not Properly Functioning** category. This is due to the lack of instream wood observed.

**Pool Frequency:** There is no current pool frequency data available for the creeks listed for this matrix. Professional judgement would put it in the **Not Properly Functioning** category. This is because it does not meet the pool frequency standards.

**Pool Quality:** There is no sediment data available for the creeks listed for this matrix. Professional judgement would rate this condition as **At Risk**. This is due to direct observation of volume reduction by fine sediments.

**Off-channel Habitat:** Based on direct observations of some backwater areas and professional judgement, this is rated **At Risk**.

**Refugia:** Streams in this list are upstream of natural barrier to steelhead. **Not Applicable**

**Wetted Width/Max Depth Ratio:** There is no current wetted width/max depth ratio data available for the creeks listed for this matrix. Professional judgement would put it in the **At Risk** category.

**Streambank Condition:** There is no current streambank condition data available for the creeks listed for this matrix. Professional judgement, direct observations, and review of riparian habitat inventories would categorize it as **At Risk**.

**Floodplain Connectivity:** Although little historic data exists showing the extent of wetlands and the frequency of overbank flows to compare to current conditions. Professional judgement would put it in to the **Properly Functioning to Functioning at Risk** category. This is due to the fair stability of these systems.

**Changes in Peak Flow/Base Flow:** Flow data has been collected on the South Fork John Day River. Past grazing activities have probably limited the ability of these watersheds to dissipate energy and store water. Upland conditions are generally improving now. Professional judgement estimates condition as **At Risk**.

**Drainage Network Increase:** Increases of the drainage network are generally limited to road interaction with streams. Based on roads commonly adjacent to streams and some road fords, this condition is rated **At Risk**.

**Road Density and Location:** Road densities are less than 3 mi/mi<sup>2</sup> with some valley bottom roads. **Functioning at Risk**.

**Disturbance History:** Most BLM forested tracts have not had significant timber harvest, so past disturbance (% ECA) is less than 15%. **Properly Functioning**

**Riparian Reserves:** To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these stream segments. **Not Applicable**

## **D. Baseline Conditions for the North Fork John Day Subbasin #17070202**

### **1. Segment 6: North Fork - Kimberly to Monument**

#### **a. Location and Characteristics**

This segment lies between the mainstem/North fork John Day River confluence (at Kimberly) and the community of Monument, a distance of 16 miles. The river valley in this segment is very wide with much of the bottomland in cultivated fields. State Highway 402 parallels the river here for 14 miles.

There are several farms and ranches along the river and large fruit orchards near Kimberly. There are three BLM recreation sites on the few tracts of public land in this segment that provide river access .

#### **b. Water Quantity and Quality**

The North Fork subbasin encompasses an area of about 2,500 square miles in Morrow, Umatilla, Union and Grant counties. The North Fork John Day River flows westward from the Blue Mountains for over 100 miles before entering the mainstem John Day River at Kimberly (RM 184). Subbasin elevations range from about 1,900 feet near the mouth, to over 8,000 feet in the Blue Mountains.

The North Fork contributes over 60% of the average annual discharge of the John Day basin. Average annual discharge at Monument is 946,900 acre-feet (USGS 2000). Peak discharge generally occurs between March and early June, with lowest flows generally during July, August, and September.

The North Fork has the best chemical, physical, and biological water quality in the John Day basin. Water quality is adequate for most beneficial uses, though this segment of the river can be subject to temperatures that exceed ODEQ standards. These conditions may be partially attributed to historic and present land management practices such as logging, road construction, irrigation, and improper livestock grazing that occur in upstream segments or local tributaries. For example, observations and water quality samples collected by ODEQ from Rudio and Cottonwood Creeks indicate the presence of elevated temperatures, low dissolved oxygen, low flows, siltation, bank erosion, and debris accumulation in these streams. River Segment 8 presently has no mining claims within a quarter mile of the John Day River. Historically, there have been many hundreds of claims within the Umatilla and Wallowa-Whitman National Forests, and all but a very small number were dropped in the late 1980s and early 1990s. The residual effects of mining practices on the geomorphology of the North Fork John Day River are minimal.

Segment 6 is included on the ODEQ 303(d) list for high summer water temperatures. According to the North Fork John Day Agricultural WQMP Draft (February 22, 2000), the subbasin has numerous sites with hot water (geothermal) springs, but total flows and the impact to stream temperatures are not fully understood. The ODEQ suspects improved protection of the upper

part of the North Fork subbasin has led to the increase in North Fork John Day River water quality(Cude 2000).

The upper reaches of most of the North Fork subbasin are located within the Umatilla and Malheur National Forests. Within these lands, forest canopy, soils, slope, elevation, and land use help determine how much water is produced in the subbasin. The average annual water yield for the subbasin above Monument is 378 acre-feet per square mile. Average annual water yield is considerably greater in the upland forest areas than for the rest of the subbasin.

### **c. Fisheries**

The North Fork subbasin is the major producer of wild spring chinook and summer steelhead in the John Day basin. The subbasin contains approximately 72 miles of spring chinook spawning and rearing habitat and 700 miles of steelhead habitat. Approximately 58% of the total basin spring chinook population and 43% of the total summer steelhead population are produced in this drainage. In recent years, as many as 1,555 adult spring chinook and 8,000 adult summer steelhead have returned annually to the subbasin to spawn. In addition, the lower North Fork is the migratory route for runs traveling to and from the Middle Fork subbasin. The North Fork drainage also supports resident fish populations. Smallmouth bass reside in the North Fork below RM 22.6 and resident trout are found throughout the subbasin.

Steelhead, resident trout, and smallmouth bass populations provide a substantial recreational fishery for anglers. Annually, about 10,000 angler use days are spent fishing for steelhead on the North Fork. Trout and bass fishing generate another 2,500 to 5,000 angler use days each year.

Major steelhead-producing streams in this segment include Cottonwood and Rudio creeks. Elevated stream temperatures in the summer may reduce the ability of these streams to support steelhead rearing.

Bull trout are also found within the headwaters of the North Fork. There are population strongholds located on Forest Service ground in these areas. Segment 6 below Monument is strictly a winter migratory corridor for bull trout.

### **d. Vegetation**

The annual precipitation in this segment averages 12 to 24 inches as described in ICBEMP (Quigley and Arbelbide 1997). The river elevation rises from 1,820 feet to around 2,000 feet above sea level. Most of this segment is characterized by agricultural and pasture land rising gradually (3 - 10%) from the river and reaching canyon slopes (45 - 75%) that are 3,200 to 3,500 feet above sea level. The soils are generally well drained, gravelly loamy sands and gravelly clay loams with slight erosion hazard.

This segment lies within the Lava Plains ecoregion (Oregon Biodiversity Project 1998). Upland plant communities have been described in ICBEMP (Quigley and Arbelbide 1997) as “dry shrub” and “cool shrub.”

Land adjacent to the river is used primarily for agriculture and ranching activities. The riparian conditions vary widely, some areas have an extensive overstory of willow, alder, and water birch with an understory of grasses, sedges, and rushes. Other locations have little vegetation, consisting mainly of rock and gravel shorelines. Other vegetation associated with the riparian areas include clovers, clematis, horsetail, rose, bluegrass, and cottonwoods. A Proper Functioning Condition Assessment has not been completed for Segment 6.

The only special status species known to occur in this river segment is arrowleaf thelypody. Species suspected to occur in the segment are Torrey's rush, hepatic monkeyflower and Columbia cress.

#### **e. Agriculture and Grazing**

Livestock grazing and growing hay in fields along the river are the principal economic uses of this river segment. Lands just off the river, both public and private, are used for livestock grazing during the spring and summer. Livestock, primarily cattle, are fed in concentrated feed lot operations during the winter. These operations occur along the river where cattle are fed the hay grown in the area during the summer. There are 16 BLM-administered grazing allotments on this segment.

#### **f. Recreation**

Public recreation opportunities within this segment are limited to the few tracts of BLM administered lands on the river and driving for pleasure on State Highway 402 and other public roads. The public lands provide the opportunity to boat, fish, camp, hunt, view wildlife, swim, and enjoy picnics. The BLM manages two developed campgrounds at Lone Pine and Big Bend, and one day-use site at Monument. Primitive boat ramps are available at Big Bend campground, and at the Monument River Access Park, which serves as a take-out point for day and overnight boating trips originating at various points upstream. Vandalism is a problem at these sites, particularly at Big Bend and Monument.

This river segment has received relatively low public recreation use in the past, but use is increasing. Primary recreational activities include fishing, and camping. The campgrounds in the area receive the most use during the fall hunting season when hunters use them as base camps to access other public lands in the area. Boating in this segment is primarily associated with fishing and occurs from April through early-July, with use levels very low. No commercial use was reported in this segment during 1998.

#### **g. Access**

State Highway 402 in Grant County closely follows this river segment for 14 miles, from Kimberly to Monument. It intersects two parcels of BLM-administered land in which the Big Bend and Lone Pine campgrounds are located. Big Bend has a primitive boat launch. The balance of river frontage in this segment is privately owned. A river access park is located at Monument.

Table 22 lists the ephemeral, intermittent and perennial streams within Segment 6 that contain or may have downstream effects on listed steelhead or their critical habitat.

Table 22. - Stream miles of summer steelhead habitat within Segment 6 from Service Creek to Dayville. Steelhead habitat was taken from the ODFW ORIS database (1994). Potential steelhead habitat was determined using professional judgement.

Stream Name	BLM Miles	Tributary to	Flow Regime	Steelhead Waters
North Fork John Day	2.0	John Day River	Perennial	Winter Rearing
Birch Creek	0.25	NFJDR	Perennial	No

## **Description of Ratings of Baseline Indicators for Segment 6: North Fork from Kimberly to Monument, including the North Fork John Day River .**

**Water Temperature:** This segment of the North Fork John Day River (NFJDR) is considered Winter Rearing Habitat only for steelhead. Data reveals that this segment has not meet State of Oregon criteria of 64 degrees F. This standard has been exceeded each year between 1986-95 at the river mouth. **Not Properly Functioning**

**Sediment/Turbidity:** There is no sediment data available for the NFJDR. Based on direct observation, turbidity is low to moderate. Professional judgement would rate condition as **At Risk**.

**Chemical Contamination/Nutrients:** No DEQ 303d listed reaches. Upstream agriculture influences is minor. **Properly Functioning**

**Physical Barriers:** There are no man-made barriers on the NFJDR. **Properly Functioning**

**Substrate Embeddedness:** There is no substrate embeddedness data available for the NFJDR. Professional judgement based on 1996 Riparian Photopoint studies would estimate cobble embeddedness between 20-30 percent. **At Risk**

**Large Wood:** There is no large wood data available for the NFJDR. Professional judgement would put it in the **Not Properly Functioning** category. This is due to the lack of instream wood observed.

**Pool Frequency:** There is no current pool frequency data available for the NFJDR. Professional judgement would rate it **Not Properly Functioning**. This is based on infrequent number of pools seen from direct observations.

**Pool Quality:** Based on direct observations, pools in the NFJDR generally are large and deep (>1 meter), but have moderate reductions of pool volume by fine sediment. Professional judgement would rate condition as **At Risk**.

**Off-channel Habitat:** Based on general lack of backwater areas observed, this category condition is **Not Properly Functioning**. Past management activities which damaged streambank stability and high flow events likely altered most natural off-channel habitats.

**Refugia:** Adequate habitat refugia does not exist on the NFJDR. With the current fragmented BLM ownership pattern on the river, even the most proactive restoration efforts are not going to supersede actions from many more private miles on the river. Riparian areas are not sufficient to buffer instream habitats from upstream actions that degrade habitat quality. These refugia are not of sufficient size, number and connectivity to maintain viable populations or sub-populations. **Not Properly Functioning**

**Wetted Width/Max Depth Ratio:** There is no current wetted width/max depth ratio data available for the NFJDR. Professional judgement would put it in the **Not Properly Functioning** category. This is based on direct observations and review of old stream survey data.

**Streambank Condition:** There is no current streambank condition data available for the NFJDR. Professional judgement from direct observation and review of 1996 photopoint studies would put it in the **At Risk** category. Bare cobble bars are common along the river, but fairly stable.

**Floodplain Connectivity:** Little historic data exists showing the extent of wetlands and the frequency of overbank flows to compare to current conditions. Professional judgement from direct observation and review of 1996 photopoint studies would put it in the **At Risk** category. Floodplains are likely seasonally inundated, but riparian vegetation is inadequate to capture/store waters long enough to develop wetland habitats.

**Changes in Peak Flow/Base Flow:** There is little to no flow data available for the NFJDR. Professional judgement would put it in the **Not Properly Functioning** category. This is due to the reduction of perennial grasses that has probably limited the ability of these watersheds to dissipate energy. The NFJDR above Monument has historically had heavy grazing use on the private lands. Until the early 1990s, grazing on the BLM lands was season long also. This can significantly increase the peak flows on these systems.

**Drainage Network Increase:** Increases of the drainage network are generally limited to road interaction with streams. Several river fords to access hillslope roads exist. Professional judgement would estimate condition as **At Risk**

**Road Density and Location:** Estimated average road densities for all BLM lands are 2-3 mi/mi<sup>2</sup>, with one road following the NFJDR. Generally this road is outside of the riparian zone, and has little effect on the river. **At Risk**

**Disturbance History:** BLM forested tracts along the NFJDR have not had any significant timber harvest, so disturbance history (% ECA) is less than 15%. **Properly Functioning**

**Riparian Reserves:** To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**



## **Description of Ratings of Baseline Indicators for the Birch Creek in Segment 6: North Fork - Kimberly to Monument.**

**Water Temperature:** BLM has no monitoring data for this stream. Professional judgement would estimate that this stream is within 57-60 degrees F during spawning, but exceeds 64°F during summer rearing. **At Risk**

**Sediment/Turbidity:** There is no sediment data for this stream. From professional judgement and direct observations, this condition would be rated **At Risk**.

**Chemical Contamination/Nutrients:** No DEQ 303d reaches for chemical contamination. Minor amounts of agriculture lands above this stream reach. **Properly Functioning**

**Physical Barriers:** There are no known manmade barriers to steelhead migration on this stream. **Properly Functioning**

**Substrate Embeddedness:** No embeddedness measurements have been made, professional judgement from direct observations would rate this condition **At Risk**.

**Large Wood:** There is no large wood data available for this stream. Professional judgement from direct observations and review of riparian habitat inventories would rate this condition as **At Risk or Not Properly Functioning**.

**Pool Frequency:** There is no current pool frequency data available for this stream. Professional judgement from direct observations would rate this stream as **Not Properly Functioning**. This is because pool frequency standards are not currently being met.

**Pool Quality:** Pool quality would be considered **Functioning at Risk** on this stream. This rating based on direct observation of few pools deeper than 1 meter.

**Off-Channel Habitat:** No information is available to rate this stream. Based on direct observations, condition is rated **At Risk**.

**Refugia:** Based on professional judgement this stream segment is not of sufficient length, size, number and connectivity to maintain viable populations or sub-populations or serve as refugia. This segment is separated by large portions of private lands, and not connected to other contiguous stream segments on National Forest lands. **Not Properly Functioning**

**Wetted Width/Max Depth Ratio:** There is no current width to depth ratio data available for this stream. Professional judgement would rate it as **Not Properly Functioning**, because these stream channel types are not expected to have width/depth ratios less than 12.

**Streambank Condition:** Based on direct observations and review of riparian habitat inventories, most streams appear to be **At Risk**.

**Floodplain Connectivity:** Adjacent roads to this stream limits floodplain connectivity in areas. **At Risk**

**Changes in Peak Flow/Base Flow:** No long term flow data is available for this stream. Professional judgement would rate this as **At Risk**.

**Drainage Network Increase:** Increases of the drainage network are generally limited to road interaction with streams. Based on roads commonly adjacent to streams, and some stream fords, this condition is rated **At Risk**

**Road Density and Location:** Estimated average road densities are less than 3 mi/mi<sup>2</sup> with many valley bottom roads. **At Risk or Not Properly Functioning**

**Disturbance History:** Most BLM forested tracts have never been harvested, so past disturbance (% ECA) is less than 15%. **Properly Functioning**

**Riparian Reserves:** To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**

## **Description of bull trout habitat critical elements for Segment 6 - North Fork John Day River from mouth to Monument.**

**Habitat Access** - There are no known physical barriers to bull trout migration.

**Habitat Elements** - Large instream wood is rare to absent in this section of river. Riparian vegetation is lacking in most places and river flow fluctuates significantly between summer and winter. High water temperatures limit bull trout access to the winter season. The river has some off channel habitat areas and limited amounts of habitat refugia.

**Channel Condition/Dynamics** - No data is available on Wetted Width/Maximum Depth Ratios for the river. Based on informal observations, streambank conditions generally have 90 percent stability over 50-80 percent of any stream reach (Functioning at Risk). Streambank stability is primarily provided from rock, grasses, scattered deciduous shrubs and trees and pine trees. Off channel areas are probably frequently hydrologically linked to main channels in the river, based on informal observations.

**Flow/Hydrology** - Problems of the river are high volumes of runoff, low summer streamflows, and localized degraded water quality. Seasonal streamflows are unevenly distributed throughout the year. Some erosion and sedimentation problems occur in localized areas. Periodic high flows carry sediment and increase turbidity, affecting water quality and fish habitat (OWRD, 1986).

**Watershed Conditions** - There are many valley bottom roads, but road densities range from 1-2.4 miles/mi<sup>2</sup>. The BLM does not administer or maintain any roads within the area. Most of this area is non-forested. The level of disturbance history on private lands is largely unknown. It is estimated that riparian conservation areas (RHCA's) have experienced moderate to high losses of connectivity or function. Presently the riparian vegetation component along the river probably does not contribute largely to stream function. Conditions of RHCA's on tributary habitats is generally better however. Riparian areas are estimated to be >50% in similarity to natural community composition. Because the area is arid, resiliency of habitat to recover from environmental disturbances is moderate to low. Most scour events are localized.

**Integration of Species and Habitat Conditions** - There are no bull trout spawning habitats in the river. According to ODFW these populations are at "Moderate Risk" of extinction. Cumulative disruption of habitat from mining, timber harvesting, road building, and grazing, past opportunities for sport fishing overharvest, poaching, and hybridization and competition with brook trout has resulted in a declining trend in the subpopulation size. Winter migratory habitat connects these spawning stream reaches and connectivity is likely during spawning season.

## **2. Segment 7: North Fork - Monument to Camas Creek**

### **a. Location and Characteristics**

This very remote river segment stretches 41 miles between Camas Creek near Dale, downstream to Monument. There is a primitive road adjacent to most of this segment, but occasionally it is impassable in inclement weather and often passable only by four-wheel-drive vehicle. The river flows through some of the finest scenery in Oregon, with abundant wildlife and interesting white water. The river valley is bordered by steep rugged hills covered with park-like stands of ponderosa pine, grass-covered clearings and rock outcrops. The riparian zone and side canyons are forested with ponderosa pine and Douglas fir trees.

There are a few dwellings and commercial structures near the communities of Monument and Dale, with a few ranches in the mid-portion of the segment.

### **b. Water Quantity and Quality**

For a general discussion of water quantity and quality in the North Fork John Day River, see Segment 6.

The river flows from an elevation of 2,700 feet at the confluence of Camas Creek, to 2,000 feet at Monument. Flow in this segment is augmented by Fox, Big Wall, Ditch, Stony, Potamus, and Camas creeks, and the Middle Fork John Day River.

Records indicate flows below 10 cfs on the North Fork tributaries, but only Fox Creek experiences periods of no flow.

Observations and water quality samples collected by ODEQ from Fox, upper Big Wall, Ditch, and Potamus Creeks are indicative of elevated temperatures, low dissolved oxygen, low flows, siltation, bank erosion, and debris accumulation as parameters, which may reduce aquatic habitat quality. These conditions can be partially attributed to improper livestock grazing, channelization, logging practices, road construction, and irrigation withdrawals.

Segment 7 is included in the ODEQ 303(d) list because it has exceeded ODEQ standards for temperature during the summer (approximately July and August).

### **c. Fisheries**

For a discussion of water and fisheries in the North Fork John Day River, see Segment 6.

Major steelhead producing streams in this segment include Deer, Wall, Potamus, Ditch, Mallory, and Camas creeks.

The mainstem in this section functions as a winter migratory corridor for bull trout.

### **d. Vegetation**

The average annual precipitation is 12 to 24 inches in this segment (Quigley and Arbelbide 1997). The river elevation rises from about 2,000 feet at Monument, to 2,715 feet above sea level at the confluence with Camas Creek. The canyon is generally narrow in this segment, with slopes (40 - 65%) rising to around 4,400 feet above sea level.

Segment 7 lies within the Blue Mountains ecoregion (Oregon Biodiversity Project 1998). Upland plant communities have been described in ICBEMP (Quigley and Arbelbide 1997) as “dry shrub” and “cool shrub.” Upland plant communities adjacent to the river consist of a ponderosa pine and Douglas fir mix with some sites predominately ponderosa pine. Western juniper and mountain maple are both present. Sagebrush and bitterbrush are prevalent with various grasses, including cheatgrass. Weed species present are Dalmation toadflax, bull thistle, and Scotch thistle.

In the riparian zone, various willow species, including coyote willow, are present (USDI-BLM 1996b). A variety of other woody species is present including ninebark, dog wood, hawthorn, water birch, chokcherry, cottonwood and some alder. Rose, serviceberry, and syringa are present in the lower part of Segment 7. Sedges, rushes and reed canary grass are found throughout the segment. A Proper Functioning Condition Assessment has not been completed for Segment 7.

#### **e. Agriculture**

There is no commercial cultivation of crops in this segment.

#### **f. Grazing**

There are 12 BLM-administered grazing allotments along river Segment 7.

#### **g. Recreation**

Limited public lands and a remote location have traditionally resulted in low recreation use of this river segment, but during the last few years the scenic quality, low use, and good fishing have become known to many more people, and use has increased steadily. The 17-mile primitive road from U.S. Highway 395 to Potamus Canyon provides public access to the north bank of the river. Recreational opportunities along this stretch include driving for pleasure, fishing, dispersed camping, and picnicking. Boating use in this segment is increasing dramatically. While there are no developed launch points, boaters use the many areas, both public and private, with low banks to access the river. Downstream from Potamus Canyon, where there is no public easement, there is a potential for trespass problems. The developed Monument River Access Park in Segment 6 often serves as a take-out point. Water levels are generally sufficient for floating between March and mid-June, although most people find the weather in March too harsh for enjoyable boating. The river in this segment is characterized by a rocky channel with shallow, fast-flowing water and many Class 1 and 2 rapids.

Boating use of this segment includes one to three day trips at various locations, primarily occurring in May and June. Due to a lack of developed launch points or boater registration stations, reliable use data is not available for this segment. Motorized boating is permitted in Segment 7, but it is uncertain how much motorized use occurs.

Fishing for trout, steelhead, and smallmouth bass, and hunting for deer and elk are considered to be good in this segment, but use is low, due in part to the small amount of public lands. Other than the 17-mile public easement, the large percentage of private land limits fishing and hunting on much of the segment. The BLM is currently seeking to acquire lands along 13 miles of river in the upstream portion of this segment under the proposed Northeast Oregon Assembled Land Exchange. Acquisition of these lands would increase public recreation opportunities along an additional stretch of the river.

There are no developed facilities within this river segment. Past surveys indicate that there are approximately 53 dispersed sites that have potential for camping, approximately 19 of which are on public land.

Commercial use occasionally occurs in this segment, but in 1998 there were no commercial trips reported.

#### **h. Access**

There are six miles of county road from Monument to Wall Creek. This road passes through 1.5 miles of BLM-administered land, providing river access. A privately owned dirt road crosses private land and several tracts of BLM-administered land from Wall Creek to Potamus Creek (approximately 15 miles). This is a limited season road due to wet weather conditions and is not a public access route. The ODFW has acquired a public access easement along a graveled road that follows the river closely from Potamus Creek east to Camas Creek (17 Miles) and provides easy access to the river, as well as the lands between the road and the river.

Table 23 lists the ephemeral, intermittent and perennial streams within Segment 7 that contain or may have downstream effects on listed steelhead or their critical habitat. Segment 8 also functions as winter migratory habitat for bull trout.

Table 23. - Stream miles of summer steelhead habitat within Segment 4 from Service Creek to Dayville. Steelhead habitat was taken from the ODFW ORIS database (1994). Potential steelhead habitat was determined using professional judgement.

Stream Name	BLM Miles	Tributary to	Flow Regime	Steelhead Waters
North Fork John Day	15.0	John Day River	Perennial	Winter Rearing
Mallory Creek	0.1	NFJDR	Perennial	Spawning and Rearing
Cabin Creek	0.2	NFJDR	Perennial	Spawning and Rearing

## **Description of Ratings of Baseline Indicators for Segment 7 - the North Fork John Day River from Monument to Camas Creek.**

**Water Temperature:** This segment of the North Fork John Day River (NFJDR) is considered Winter Rearing Habitat only for steelhead. Data reveals that this segment has not meet State of Oregon criteria of 64 degrees F. This standard has been exceeded each year between 1986-95 at the river mouth. **Not Properly Functioning**

**Sediment/Turbidity:** There is no sediment data available for the NFJDR. Based on direct observation, turbidity is low to moderate. Professional judgement would rate condition as **At Risk**.

**Chemical Contamination/Nutrients:** No DEQ 303d listed reaches. Upstream agriculture influences is minor. **Properly Functioning**

**Physical Barriers:** There are no man-made barriers on the NFJDR. **Properly Functioning**

**Substrate Embeddedness:** There is no substrate embeddedness data available for the NFJDR. Professional judgement based on 1996 Riparian Photopoint studies would estimate cobble embeddedness between 20-30 percent. **At Risk**

**Large Wood:** There is no large wood data available for the NFJDR. Professional judgement would put it in the **Not Properly Functioning** category. This is due to the lack of instream wood observed.

**Pool Frequency:** There is no current pool frequency data available for the NFJDR. Professional judgement would rate it **Not Properly Functioning**. This is based on infrequent number of pools seen from direct observations.

**Pool Quality:** Based on direct observations, pools in the NFJDR generally are large and deep (>1 meter), but have moderate reductions of pool volume by fine sediment. Professional judgement would rate condition as **At Risk**.

**Off-channel Habitat:** Based on general lack of backwater areas observed, this category condition is **Not Properly Functioning**. Past management activities which damaged streambank stability and high flow events likely altered most natural off-channel habitats.

**Refugia:** Adequate habitat refugia does not exist on the NFJDR. With the current fragmented BLM ownership pattern on the river, even the most proactive restoration efforts are not going to supersede actions from many more private miles on the river. Riparian areas are not sufficient to buffer instream habitats from upstream actions that degrade habitat quality. These refugia are not of sufficient size, number and connectivity to maintain viable populations or sub-populations. **Not Properly Functioning**

**Wetted Width/Max Depth Ratio:** There is no current wetted width/max depth ratio data available for the NFJDR. Professional judgement would put it in the **Not Properly Functioning** category. This is based on direct observations and review of old stream survey data.

**Streambank Condition:** There is no current streambank condition data available for the NFJDR. Professional judgement from direct observation and review of 1996 photopoint studies would put it in the **At Risk** category. Bare cobble bars are common along the river, but fairly stable.

**Floodplain Connectivity:** Little historic data exists showing the extent of wetlands and the frequency of overbank flows to compare to current conditions. Professional judgement from direct observation and review of 1996 photopoint studies would put it in the **At Risk** category. Floodplains are likely seasonally inundated, but riparian vegetation is inadequate to capture/store waters long enough to develop wetland habitats.

**Changes in Peak Flow/Base Flow:** There is little to no flow data available for the NFJDR. Professional judgement would put it in the **Not Properly Functioning** category. This is due to the reduction of perennial grasses that has probably limited the ability of these watersheds to dissipate energy. The NFJDR above Monument has historically had heavy grazing use on the private lands. Until the early 1990s, grazing on the BLM lands was season long also. This can significantly increase the peak flows on these systems.

**Drainage Network Increase:** Increases of the drainage network are generally limited to road interaction with streams. Several river fords to access hillslope roads exist. Professional judgement would estimate condition as **At Risk**

**Road Density and Location:** Estimated average road densities for all BLM lands are 2-3 mi/mi<sup>2</sup>, with one road following the NFJDR. Generally this road is outside of the riparian zone, and has little effect on the river. **At Risk**

**Disturbance History:** BLM forested tracts along the NFJDR have not had any significant timber harvest, so disturbance history (% ECA) is less than 15%. **Properly Functioning**

**Riparian Reserves:** To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**



**Description of Ratings of Baseline Indicators for the following tributaries of the NFJDR in Segment 7; Mallory and Cabin Creek.**

**Water Temperature:** BLM has no monitoring data for these streams. Professional judgement would estimate that these streams are within 57-60 degrees F during spawning, but that nearly all exceed 64°F during summer rearing. **At Risk or Not Properly Functioning**

**Sediment/Turbidity:** There is no sediment data for these streams. From professional judgement and direct observations, this condition would be rated **At Risk**.

**Chemical Contamination/Nutrients:** No DEQ 303d reaches for chemical contamination. Minor amounts of agriculture lands above these stream reaches. **Properly Functioning**

**Physical Barriers:** There are no known manmade barriers to steelhead migration on these streams. **Properly Functioning**

**Substrate Embeddedness:** No embeddedness measurements have been made, professional judgement from direct observations would rate this condition **At Risk**.

**Large Wood:** There is no large wood data available for these streams. Professional judgement from direct observations and review of riparian habitat inventories would rate this condition as **At Risk or Not Properly Functioning**. Most of these streams are within forested habitats and do have potential for large wood recruitment.

**Pool Frequency:** There is no current pool frequency data available for these streams. Professional judgement from direct observations would rate these streams as **Not Properly Functioning**. This is because pool frequency standards are not currently being met.

**Pool Quality:** Pool quality would be considered **Functioning at Risk** on these streams. This rating based on direct observation of few pools deeper than 1 meter.

**Off-Channel Habitat:** No information is available to rate these streams. Based on direct observations, condition is rated **At Risk**.

**Refugia:** Based on professional judgement these stream segments are not of sufficient length, size, number and connectivity to maintain viable populations or sub-populations or serve as refugia. These segments generally are scattered among large portions of private lands, and not connected to other contiguous stream segments on National Forest lands. **Not Properly Functioning**

**Wetted Width/Max Depth Ratio:** There is no current width to depth ratio data available for these streams. Professional judgement would rate them **Not Properly Functioning**, because these stream channel types are not expected to have width/depth ratios less than 12.

**Streambank Condition:** Based on direct observations and review of riparian habitat inventories, most streams appear to be **At Risk**.

**Floodplain Connectivity:** Adjacent roads to these streams limits floodplain connectivity in areas. **At Risk**

**Changes in Peak Flow/Base Flow:** No long term flow data is available for these streams. Peak Crest Gauges are have been monitored on Mallory and Cabin Creeks since the mid 1990s. Professional judgement would rate this as **At Risk**.

**Drainage Network Increase:** Increases of the drainage network are generally limited to road interaction with streams. Based on roads commonly adjacent to streams, and some stream fords, this condition is rated **At Risk**

**Road Density and Location:** Estimated average road densities are less than 3 mi/mi<sup>2</sup> with many valley bottom roads. **At Risk or Not Properly Functioning**

**Disturbance History:** Most BLM forested tracts have never been harvested, so past disturbance (% ECA) is less than 15%. **Properly Functioning**

**Riparian Reserves:** To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**

## **Description of bull trout habitat critical elements for Segment 7 - North Fork John Day River from Monument to Camas Creek.**

**Water Quality** - The NFJDR subbasin has the best chemical, physical, and biological water quality in the John Day basin. Water quality problems do occur in localized areas. Water quality is adequate for most beneficial uses. Elevated water temperatures and sedimentation do impair uses by cold water fishes however. Elevated water temperatures occur during low flows and sedimentation and erosion occur during high flows. Stream reaches like upper Big Wall Creek exhibit elevated temperatures, low dissolved oxygen, low flows, siltation, and bank erosion. These conditions can be partially attributed to grazing, channelization, logging practices, road construction, ice flows, and irrigation withdrawals (OWRD, 1986). Tributaries of the NFJDR have better shading and denser tree and shrub components than the main river. In 1995, water quality data was collected at RM 38.2 on the NFJDR. The 7-day average maximum daily temperatures for the site was 26.9 C at RM 45 starting the week of July 23.

**Habitat Access** - There are no known physical barriers to bull trout migration in the mainstem NFJDR.

**Habitat Elements** - No quantitative data has been collected on substrate embeddedness in the area. Rough estimates from a 1996 riparian photo point survey indicate that embeddedness is within 20-30%. Large instream wood is rare in the NFJDR, and throughout the analysis area. Ditch Creek had the most instream wood of all the tributaries in 1996. Pool frequencies and quality in the NFJDR are likely functioning appropriately, but tributaries have considerably lower pool frequencies than desired. Pools in the NFJDR generally are large and deep (>1 meter), but tributaries have few large and deep pools. The NFJDR has some off channel habitat areas and limited amounts of habitat refugia.

**Channel Condition/Dynamics** - No data is available on Wetted Width/Maximum Depth Ratios for the NFJDR or its tributaries. Based on informal observations, streambank conditions generally have 90 percent stability over 50-80 percent of any stream reach (Functioning at Risk). Streambank stability is primarily provided from rock, grasses, scattered deciduous shrubs and trees and pine trees. Off channel areas are probably frequently hydrologically linked to main channels in the NFJDR, based on informal observations.

**Flow/Hydrology** - The NFJDR is the most important subbasin in terms of water quality and flow contribution to the John Day River, contributing over 60 percent of the annual average discharge of the basin. Some tributaries in the analysis area (Stony, Ditch, and Mallory) are known to experience interrupted surface flows during dry years. Problems of the North Fork subbasin are high volumes of runoff, low summer

streamflows, and localized degraded water quality. Seasonal streamflows are unevenly distributed throughout the year. Some erosion and sedimentation problems occur in localized areas. Periodic high flows carry sediment and increase turbidity, affecting water quality and fish habitat (OWRD, 1986).

Historic and current land use activities have altered the analysis area drainage. Mining, specifically dredging, has modified stream channels and riparian vegetation upstream of the analysis area. Timber harvest, road construction and livestock grazing may contribute to the uneven distribution of subbasin discharge (OWRD, 1986). Low to moderate increases in active channel length have probably occurred in the area due to human caused disturbances, but availability of data to substantiate this is unknown.

**Watershed Conditions** - There are many valley bottom roads, but road densities range from 1- 2.4 miles/mi<sup>2</sup>. The BLM does not administer or maintain any roads within the analysis area. All roads are either gravel or native material surfaced. Most of this analysis area is non-forested, but riparian areas have had timber harvesting that has impacted habitat conditions. The level of disturbance history on private lands is largely unknown, however some marginal forest lands in the Ditch and Wall Creek drainages on private lands have been extensively harvested. Forested areas are concentrated upstream of Potamus Creek on the south canyon slopes of the NFJDR, and have been harvested moderately. Most forested BLM tracts have not had any significant timber harvest. It is estimated that riparian conservation areas (RHCA's) have experienced moderate to high losses of connectivity or function, particularly on the lower NFJDR below Potamus Creek. Presently the riparian vegetation component along the NFJDR probably does not contribute largely to stream function. Conditions of RHCA's on tributary habitats is generally better however. BLM parcels on the NFJDR and tributaries generally have a well intact overstory component of conifers, and varying conditions of understory shrub and tree species. Riparian areas are estimated to be >50% in similarity to natural community composition. Because the area is arid, resiliency of habitat to recover from environmental disturbances is moderate to low. Most scour events are localized.

**Integration of Species and Habitat Conditions** - Bull trout spawning habitats in the NFJDR drainage (upstream of the analysis area) are concentrated in the upper tributaries and Desolation Creek. According to ODFW these populations are at "Moderate Risk" of extinction. Cumulative disruption of habitat from mining, timber harvesting, road building, and grazing, past opportunities for sport fishing overharvest, poaching, and hybridization and competition with brook trout has resulted in a declining trend in the subpopulation size. Winter migratory habitat connects these spawning stream reaches and connectivity is likely during spawning season.

## **E. Baseline Conditions for the Middle Fork John Day River Subbasin #17070203**

### **1. Segment 9: Middle Fork of the John Day River**

#### **a. Location and Characteristics**

The Middle Fork of the John Day River is located entirely within Grant County, draining a subbasin of approximately 806 square miles. The Middle Fork originates in the Blue Mountains within the Malheur National Forest. It flows about 75 miles northwest from its source before entering the North Fork at RM 32.2. The subbasin has highly variable terrain with elevations ranging from 8,100 feet in the headwater areas to about 2,200 feet near the mouth. The canyon is generally narrow in this segment, with slopes (20 - 70%) rising to around 3,600 feet above sea level at the lower end and around 7,000 feet near the headwaters.

The vast majority of river frontage of the Middle Fork is privately owned. These lands are used primarily for livestock grazing. Past land management practices along this segment include use of heavy equipment to channelize the river (especially on private lands), mining for gold with dredges, and road construction. Much of the natural riparian vegetation was removed in some areas by these actions. Recovery is occurring slowly.

Recreation use occurs primarily along the uppermost 30 miles of this river in the National Forest. Peak use periods are the spring and summer for fishing and the fall for hunting. Use of this area is generally light, but increasing.

The largest community near the Middle Fork is Long Creek, with a population of 245. Other communities closer to the river include Ritter, Galena, Susanville, Austin, and Bates. The U.S. Highway 395 passes north to south through the western portion of the subbasin, and U.S. Highway 26 goes through the southeastern headwater area. In addition, an improved road parallels the Middle Fork for most of its length.

#### **b. Water Quantity and Quality**

The stream gradient of the Middle Fork John Day River averages 40 feet per mile, but steeper gradients are characteristic of the river's upper reaches and tributaries. Long Creek is the major tributary draining to the Middle Fork. Other tributaries include Big, Vinegar, Bridge, Camp, Clear, and Squaw creeks.

The Middle Fork has been monitored by USGS station 14044000 located at Ritter since 1929. Mean annual discharge recorded at Ritter is 186,464 acre-feet. This accounts for about 25 percent of the estimated flow of the North Fork. Based on the Ritter gauge, peak discharge generally occurs

between March and early June, with low flows recorded for August and September (OWRD 1990).

Water quality in the Middle Fork subbasin generally exhibits satisfactory chemical, physical, and biological quality (OWRD 1986). Elevated water temperature is the most serious concern throughout the subbasin. Occasionally, the stream temperature is elevated to a point that may threaten optimum use of the reach by cold water fisheries. This segment is listed on the ODEQ 303(d) list on the basis of summer water temperature and flow modification from Crawford Creek to the mouth.

Generally, sediment and erosion problems are not serious, although localized streambank erosion does occur along some meander channels (OWRD 1986).

Most tributaries of the subbasin drain higher elevations and the effective shade consists of taller riparian vegetation. Therefore, high water temperature does not represent a long-term problem. The Middle Fork, itself, exhibits high water temperatures that threaten optimum use of the reach by cold-water fish. Temperatures that are higher than optimum for salmonid production will continue to occur as a result of natural low flow regimes and irrigation withdrawals. Mining and dredging activities have disturbed the riparian vegetation along the main river, and placement of dredge spoils has limited the rate of revegetation along the main channel. The vegetation appears to have recovered from most of the disturbance caused by historic mining activities. The BLM monitors water temperatures in this segment at the Malheur National Forest boundary and at the mouth.

Some tributaries exhibit elevated fecal coliform counts during summer months, that are probably a resultant of use of the surrounding area for season long cattle grazing. Water-contact recreation or use of these streams for domestic purposes poses potential health risks.

### **c. Fisheries**

Streams in the Middle Fork drainage generally have good channel structure, riparian and instream cover, and water quality and quantity.

The Middle Fork subbasin produces 24% of the total spring chinook and 30% of the total summer steelhead populations in the John Day basin. Currently, as many as 770 adult spring chinook and 6,000 adult steelhead migrate annually into the subbasin to spawn.

Habitat for salmon and steelhead has improved in recent years, primarily because of the removal of a diversion dam and the Bates Sawmill, which were blocking fish passage and causing water pollution. Consequently, anadromous fish production, particularly spring chinook, has increased as fish now are able to use another tributary in the upper Middle Fork system. Approximately 30 miles of spawning and rearing habitat for spring chinook are available in the Middle Fork between Armstrong and Summit Creeks. An estimated 295 miles of spawning and rearing habitat also are available in the Middle Fork and tributaries to support steelhead production.

The Middle Fork also supports a productive trout fishery. In past years, the resident trout population was supplemented with 3,000 legal hatchery rainbows. This activity was stopped in 1984. All

stocking activities (such as with fingerlings) were discontinued in 1994. Trout and steelhead provide 2,000 to 3,000 and 300 to 500 annual angler use days, respectively, on the Middle Fork.

Bull trout are found in Big, Granite, Boulder and Clear creeks and use the Middle Fork as winter migratory habitat.

#### **d. Vegetation**

Average annual precipitation in this segment varies from 12 inches at lower elevations to greater than 24 inches at the higher elevations (Quigley and Arbelbide 1997, USDA-FS 1990).

This segment lies within the Blue Mountains ecoregion (Oregon Biodiversity Project 1998). Upland plant communities have been described in ICBEMP (Quigley and Arbelbide 1997) as “dry shrub” and “cool shrub” in the lower elevations and the National Forest river segment as “dry forest” and “moist forest.”

The upland vegetation communities adjacent to the river, below 3,600 feet, consist mostly of ponderosa pine overstory, but with some sites having a mix of ponderosa pine with either white pine, lodgepole pine or western juniper (USDI-BLM 1998b). The understory is dominated by pinegrass in the denser tree stands. In the more open areas, bunchgrass, cheatgrass and some sagebrush occur. The associated riparian zone consists primarily of an overstory of coyote willow, a mix of other willow species, water birch, dogwood, ninebark, and a herbaceous component of sedges, rushes, reed canary grass and miscellaneous riparian grasses. Rock/gravel bars are common in this segment.

A Proper Functioning Condition Assessment has not been completed for Segment 9.

#### **e. Grazing**

There are three BLM-administered grazing allotments along river Segment 9.

#### **f. Recreation**

Recreation opportunities are primarily limited to the National Forest lands located on the river. There are a few widely dispersed, undeveloped recreation sites in this area which provide public river access for fishing, camping, hunting, and hiking, but no inventory of campsites has been made. Water levels usually are not sufficient for boating in this segment. Two developed campgrounds (Middle Fork and Deer Horn) are managed by the USFS.

Public recreation opportunities are limited downstream from the National Forest due to private land and limited public access.

#### **g. Access**

The Middle Fork flows through a canyon with no vehicle access for the first 10 miles upstream from the North Fork confluence. This section flows through mostly private land with two small sections of public land near the confluence. A paved county road follows the river through private land for the next three miles to Ritter Hot Springs. From Ritter to U.S.Highway 395 (10 miles), the

paved county road follows the Middle Fork through private land, except for two small parcels of public land. A all-weather county road extends from U.S. Highway 395 for 11 miles to the USFS boundary. It passes through three small parcels of BLM-administered land. From the USFS boundary, there is an all-weather road (County #20) for the remaining length to Austin Junction, with many good public access points to the river on USFS land. The Middle Fork and Deer Horn Campgrounds are two National Forest river access points. Part of this section flows through private land with access to the river by permission only. U.S. Highway 26 parallels the river through USFS land from about three miles east of Austin Junction to the source of the river, near Blue Mountain Summit.

Table 24 lists the ephemeral, intermittent and perennial streams within Segment 9 that contain or may have downstream effects on listed steelhead or their critical habitat. Segment 9 also provides winter migratory habitat for bull trout.

Table 24. - Stream miles of summer steelhead habitat within Segment 9 the Middle Fork of the John Day River. Steelhead habitat was taken from the ODFW ORIS database (1994). Potential steelhead habitat was determined using professional judgement.

<b>Stream Name</b>	<b>BLM Miles</b>	<b>Tributary to</b>	<b>Flow Regime</b>	<b>Steelhead Waters</b>
MF John Day R. (below HWY 395)	1.3	NFJDR	Perennial	Winter Rearing
MF John Day R. (Above HWY 395)	0.8	NFJDR	Perennial	Spawning and Rearing
Mosquito Creek	0.25	MFJDR	Perennial	Spawning and Rearing
Huckleberry Creek	0.1	MFJDR	Perennial	Spawning and Rearing
Cole Canyon	0.2	MFJDR	Perennial	Spawning and Rearing



## **Description of Ratings of Baseline Indicators for Segment 9 including the Middle Fork John Day River and tributaries: Mosquito, Huckleberry, and Cole Canyon.**

**Water Temperature:** Except for the MF John Day, none of these stream segments have been monitored for temperature on BLM lands. The MFJDR (1993-96) and Mosquito Creek (1991-92), all exceeded 64 F standard, and listed under DEQ 303d.. All other BLM stream segments likely exceed this summer rearing standard. Some may meet 57-60 F standard during spawning season, based on professional judgement. **Not Properly Functioning**

**Sediment/Turbidity:** There is no sediment data for these streams. From professional judgement and direct observations, this condition would be rated **At Risk**.

**Chemical Contamination/Nutrients:** The MFJDR (mouth to Crawford Creek) also is listed as a DEQ 303d reach for flow modification. Professional judgement would rate this category as **At Risk** due to high water temperatures that would affect dissolved oxygen levels.

**Physical Barriers:** There are no known manmade barriers to steelhead migration on these streams. **Properly Functioning**

**Substrate Embeddedness:** No embeddedness measurements have been made, professional judgement from direct observations would rate this condition **At Risk**.

**Large Wood:** There is no large wood data available for these streams. Professional judgement from direct observations and review of riparian habitat inventories would rate this condition as **At Risk or Not Properly Functioning**.

**Pool Frequency:** There is no current pool frequency data available for these streams. Professional judgement from direct observations would rate these streams as **Not Properly Functioning**. This is because pool frequency standards are not currently being met.

**Pool Quality:** Pool quality would be considered **Functioning at Risk** on these streams. This rating based on direct observation of few pools deeper than 1 meter.

**Off-Channel Habitat:** No information is available to rate these streams. Based on direct observations, condition is rated **Not Properly Functioning**.

**Refugia:** Based on professional judgement these stream segments are not of sufficient length, size, number and connectivity to maintain viable populations or sub-populations or serve as refugia. These segments are scattered among large portions of private lands, with little connectivity to other contiguous stream segments on National Forest lands. **Not Properly Functioning**

**Wetted Width/Max Depth Ratio:** There is no current width to depth ratio data available for these streams. Professional judgement would rate them **Not Properly Functioning**, because these stream channel types are not expected to have width/depth ratios less than 12.

**Streambank Condition:** Based on direct observations and review of riparian habitat inventories, most streams appear to be **At Risk**.

**Floodplain Connectivity:** From professional judgement and direct observations, this is rated **At Risk**. Historic data showing the extent of wetlands and the frequency of overbank flows to compare to current conditions is unknown.

**Changes in Peak Flow/Base Flow:** From review of riparian inventories, there is no evidence of peak flow/base flow changes on BLM stream segments. **Properly Functioning**

**Drainage Network Increase:** Increases of the drainage network are generally limited to road interaction with streams. Based on roads commonly adjacent to streams, this condition is rated **At Risk**

**Road Density and Location:** Estimated average road densities are 1-2.4 mi/mi<sup>2</sup> with many valley bottom roads. **At Risk or Not Properly Functioning**

**Disturbance History:** Most BLM forested tracts have never been harvested, so past disturbance (% ECA) is less than 15%. **Properly Functioning**

**Riparian Reserves:** To be able to answer this question an assessment of the potential of the different riparian sites would have to be made. At this time no such assessment has occurred on the public lands on these streams. **Not Applicable**

## **Description of bull trout habitat critical elements for Segment 9 - Middle Fork John Day River from mouth to headwaters.**

**Water Quality** - Water quality in the subbasin generally exhibits satisfactory chemical, physical and biological quality except during periods of extremely high or low flows. The most serious water quality problem in the analysis area is elevated temperatures. Most tributaries in the area are fairly well shaded. The mainstem Middle Fork does exhibit high water temperatures that threaten optimum use by cold water fish during summer months. A probable cause for this condition is degraded riparian habitat (OWRD, 1986). In 1997, water quality data was collected at RM 0.0 and 45.0 on the MFJDR. The 7-day average maximum daily temperatures were 29.2 C (RM 0.0) starting August 2, and 22.6 C (RM 45) starting August 16. Information concerning sediment problems in the area is not available.

**Habitat Access** - No known physical barriers to bull trout migration are within the area.

**Habitat Elements** - No information is available on substrate embeddedness in the area. Generally, large instream wood is rare in the Middle Fork, particularly below RM 25, but this has not been quantified. Tributaries in the area however, like Huckleberry Creek, (RM 37.7) have good quantities of instream wood and potential future supplies of instream wood. Stream survey data is not available to quantify pool frequencies and quality, but generally this area is lacking in number of pools, especially large pools, from informal observations. The MFJDR has very few off channel habitat areas and inadequate element of habitat refugia.

**Channel Condition/Dynamics** - No data is available on Wetted Width/Maximum Depth Ratios for the Middle Fork or its tributaries. Based on informal observations, streambank conditions generally have 90 percent stability over 50-80 percent of any stream reach (Functioning at Risk). Streambank stability is primarily provided from grasses, rock, scattered deciduous shrubs and trees and pine trees. Off channel areas are probably infrequently hydrologically linked to main channels in the Middle Fork, based on informal observations.

**Flow/Hydrology** - The seasonal distribution of stream discharge for the Middle Fork follows the general John Day Basin pattern. The major surface water problems are high winter and low summer streamflows. Serious erosion and sedimentation problems are localized, not basin wide. Periodic high flows carry sediment, affecting water quality and fish habitat. Low summer flows and general lack of riparian vegetation cause high water temperatures (OWRD, 1986).

Historic and current land use activities have altered the Middle Fork drainage. Mining, specifically dredging, has modified the stream channel and riparian vegetation. Timber harvest, road construction and livestock grazing contribute to the uneven distribution of subbasin discharge (OWRD, 1986). Low to moderate increases in active channel length have probably occurred in the area due to human caused disturbances, but availability of data to substantiate this is unknown.

**Watershed Conditions** - There are many valley bottom roads, but road densities only range from 1-2.4 miles/mi<sup>2</sup>. Most of this analysis area is non-forested, but riparian areas have suffered timber harvest that has impacted habitat conditions. The level of disturbance history on private lands is largely unknown. Most forested BLM tracts have not had any significant timber harvest.

It is estimated that riparian conservation areas (RHCA's) have experienced moderate to high losses of connectivity or function, particularly in the lower Middle Fork below RM 25. Conditions of RHCA's on tributary habitats is generally better however. BLM parcels on the Middle Fork and tributaries generally have a well intact vegetation under and overstory component of shrubs and conifers, and are >50% in similarity to natural community composition. Because the area is arid, resiliency of habitat to recover from environmental disturbances is moderate to low. Most scour events are likely localized.

**Integration of Species and Habitat Conditions** - Bull trout spawning habitats in the Middle Fork drainage (upstream of the analysis area) are isolated in three separate tributaries. According to ODFW these populations are in "High Risk" of extinction. Cumulative disruption of habitat has resulted in a declining trend in the subpopulation size. Winter migratory habitat connects these spawning populations, but connectivity is unlikely during spawning season.

## **Chapter 3**

## **Actions Proposed, Monitoring and Effects Analysis by Program**

In this document all proposed actions that could conceivably affect the steelhead fisheries resource or bull trout fisheries resource are included in a broad sense. This includes actions as described in the John Day River Management Plan under: Riparian and Aquatic Habitat Restoration, Fish, Water Quality and Quantity, Recreation Opportunities, Energy and Minerals and Vegetation Management Alternatives including - Forestlands, Grazing and Agricultural Lands. While most of these activities have a small if not imperceptible effect on the fisheries resource with regard to actions and guidelines specified in the plan, actions which involve vegetation management or manipulation present a higher potential for effects.

Analysis of effects to bull trout are included in each program. Bull trout do not inhabit as much of the basin as do steelhead. Within the plan boundaries bull trout occur in Segments 4, 5, 6, 7, 8, and 9; there are no mainstem bull trout habitats within the plan boundaries in Segment 5, therefore segment 5 will not be analyzed for bull trout impacts. Actions for coverage are denoted by which regulatory agency they apply to - NMFS or USFWS. The description of effects to steelhead and steelhead habitat are in most cases similar to affects on bull trout and bull trout habitat, therefore one analysis of effects will be sufficient for both species unless where otherwise noted.

Each program is dealt with in entirety including: proposed actions, monitoring and effects analysis. Under each program the specific actions for which the Prineville BLM is seeking coverage are described.

### **I. Riparian and Aquatic Habitat Restoration**

#### **A. Proposed Actions and Program Description**

The Riparian and Aquatic habitat restoration program includes two types of actions addressed in the John Day River Proposed Management Plan:

- 1) Riparian and Fish habitat enhancement structures; and
- 2) Native hardwood riparian planting.

#### **1. Riparian and Fisheries Enhancement Structures**

Riparian and fish habitat enhancement structures would include direct actions such as bioengineering of streambank or riparian areas, or the introduction, placement and maintenance of large woody material or other structural materials to improve riparian or instream habitats. The Proposed Management Plan does not identify, initiate or designate any current or future projects of this nature, the plan merely retains this type of project as a management tool option should the situation arise that such projects are deemed necessary and the most likely action to move toward restoration of fish habitats and populations and proper functioning riparian areas. Any future action involving these types of ground disturbing projects would necessarily involve coordination and consultation with Oregon Department of Fish Wildlife, Oregon Division of State Lands, and Oregon Parks and Recreation Department State Scenic Waterways Division. In addition any future proposed projects of this nature on public lands would be subject to public

review and appropriate federal, state and tribal consultation. The proposal of specific projects will initiate Section 7 ESA consultation with NMFS and USFWS. In addition, prescriptions within the WSR segments would be designed and evaluated for concurrence with Interagency Wild and Scenic Rivers Coordinating Council (IWSRCC) guidance.

The 1997 IWSRCC Technical Report states: "Construction and maintenance of minor structures for the protection, conservation, rehabilitation, or enhancement of fish and wildlife habitat are acceptable, provided they do not have a direct and adverse effect on the values of the river, including the free-flowing nature. Structures should be compatible with the river's classification, allow the area to remain natural in appearance, and harmonize with the surrounding environment."

## **2. Native Hardwood Outplanting**

The current program of native hardwood outplanting would continue in all areas found suitable for this type of planting. The following excerpt from the Native Hardwoods Supplementation Project John Day River Basin Environmental Assessment by Gary Torretta and Mark Lesko (USDI-BLM 1994a) describes the specific project description:

*This [action] would involve the collection, propagation, and planting of native trees and shrubs common to riparian areas, including but not limited to black cottonwood. To supplement riparian tree and shrub populations, material collected and propagated from native genetic stock would be outplanted near John Day Basin streams. Cuttings would be grown in propagation areas, termed "clone banks" for species such as cottonwood and willow. Clone banks would also preserve native willows which can be propagated from unrooted cuttings.*

### **COLLECTION OF VEGETATIVE MATERIAL**

*Cuttings from native hardwood species would be gathered to preserve genetic material in clone banks. Collections would provide material for direct outplanting projects. Collections would primarily be taken from the John Day River Basin. If genetic material is severely limited along the lower John Day River, native tree material may be gathered from other Columbia River tributaries, such as the Yakima or Umatilla Basins. Tree stocks from compatible elevation zones (from other river basins) should exhibit better survival than upper John Day Basin tree stocks from higher elevations, which may be unsuitable for the lower river climate.*

*According to Dr. R.F. Stettler (Stettler 1994), an ecologist/geneticist and authority on black cottonwood from the University of Washington, elevation compatibility is more important than latitude in establishing black cottonwood. Spring flush (bud break) timing is the strongest genetic trait inherited. A tree originating at 5,000 feet elevation will likely break bud sometime in May, regardless of where it is planted. Trees collected in the upper John Day drainage (where largest populations exist) would not be well suited for survival in lower river climates where genetic material is very limited. Stettler contends that black cottonwood freely hybridizes with other poplars. He further states that supplementary outplantings should emphasize genetic diversity, which increases the probability for outplanting success.*

### **PROPAGATION**

*Propagation areas, or "clone banks" to grow tree whips for outplanting projects will be developed. A two acre propagation area is proposed on agricultural lands recently acquired by the BLM. These publicly owned lands, currently leased for agricultural use, are located near John Day River Mile 139. An existing BLM water right would be utilized to flood irrigate the propagation area during the dry season, using the existing irrigation system. A livestock/wildlife exclosure fence will be maintained around the propagation beds. (Subsequent proposals in the John Day River Proposed Management Plan replace this area with another area near Clarno (RM 108) where BLM also holds agricultural fields and associated water rights)*

*Mechanical equipment would prepare the site and control weed competition. Weed control practices will be consistent with the Prineville District Integrated Weed Management Environmental Assessment, OR-053-3-062, June, 1994. Weed control methods within the propagation beds would primarily be done by manual or mechanical means for the first two to three years, and would be consistent with all required mitigating factors and stipulations stated in the Weed Management EA to control noxious forbs.*

#### **OUTPLANTING AND RELATED ACTIONS**

*Cuttings from the propagation beds will be outplanted to enhance riparian habitats. Related actions include scalping of competing vegetation (normally a 3-4 feet circle to mineral soil around each planted cutting), hoe, bar, or auger planting, mulching and fertilization. Individual tree or area fencing will protect plantings from wildlife and livestock. Outplanting sites best suited for tree survival will have suitable sandy soils, perennial stream flow, near proximity to water table and grazing management compatible with riparian vegetation regrowth each year (no hot season grazing). Additionally site selections will be based on lack of canopy cover and perceived potential for habitat/stream stability recovery.*

*The location of proposed planting sites will be reviewed by the district botanical specialist prior to planting to minimize potential conflicts with known populations of special status plants.*

#### **OTHER SPECIES**

*Some species are most effectively grown from seed. Local private nurseries would be contracted to propagate the seed into rooted seedlings or whips. BLM staff or private contractors would collect the seed and document its origin. Black cottonwood and native willows will be the initial species outplanted. Enhancement or supplementation of other species such as aspen, alder, water birch, dogwood, elderberry, ponderosa pine, chokecherry, wild rose, mountain mahogany and others would follow.*

#### **SPECIFIC ACTIONS**

*Specific actions related to parent tree selections, dormant material collections, propagation of cuttings, and outplanting projects are detailed in the "Native Hardwoods Enhancement Plan for John Day River Basin Riparian Areas". The following excerpt which describes the specific action plan is taken from that document:*

## **ACTION PLAN**

- 1) Collect native plant material to preserve the native genetic stock. Clones will be maintained in a "clone bank."*
- 2) Produce vigorous, locally-adapted black cottonwood cuttings for outplanting projects.*
- 3) Establish populations of sufficient size and vigor whereas they will self-maintain, expand, and colonize other sites.*

## **PARENT TREE (CLONE) SELECTION**

- Select native hardwood species from scattered individuals or small stands in riparian areas. In areas with very small numbers of existing clones, the only selection criteria will be that parent material is alive and can furnish cuttings. Where larger populations exist, collections will be made at the rate of one clone per 1-2 miles of riparian area, or for each 500 foot elevation change.*
- An identification number will be assigned to each selected tree (e.g. JD-001). A metal tree tag will be placed at ground level and, where located on public land, a "Please Protect" sign will be placed at breast height and facing away from the nearest road.*
- A tree register sheet will be filled out (number, legal description, elevation, and sub-drainage name) for each selected clone. A map will be maintained identifying all collection sites.*

## **CUTTING COLLECTION**

- In December-February, collect dormant shoots from the upper crown or healthy branches of the selected trees. Collect a minimum of 30 straight cuttings (last year growth preferred) from each selected tree.*
- Collection methods: using pruning clippers on lower branches, or using a rifle to shoot down branches which cannot otherwise be reached. Place cuttings in a plastic ziplock bag with moist sphagnum moss. Mark the bag with tree number, date, collector initials and name of drainage. Store at 32 degrees, at Ochoco National Forest tree cooler, until outplanting, or placement into propagation bed.*

## **ROOTING CUTTINGS AT THE PROPAGATION AREA (CLONE BANK)**

- Black cottonwood is easily reproduced by planting unrooted cuttings. It can make very rapid juvenile growth (USDA Forest Service 1965). Annual growth rate may vary among clones and planting sites. Western Oregon Black Cottonwood can grow 6-15 feet a year, but there is no growth data available for Central Oregon Black Cottonwood. Most species of willows can be propagated by planting dormant stock cuttings.*



- Depending on availability of cuttings and their condition, 10-30 cuttings from each clone will be planted in the propagation area, also known as the clone bank. Cuttings will be fertilized with Osmocote (18-16-13), a timed released nitrogen and trace element supplement. The proposed propagation area will be located along the John Day River at river mile 139, near Twickenham. This site, known as Priest Hole, is ultimately expected to produce all needed cuttings for outplanting projects. (Subsequent proposals in the John Day River Proposed Management Plan replace this area with another area near Clarno (RM 108) where BLM also holds agricultural fields and associated water rights)
- Once clone banks are established, the estimated life of the beds is about 10-15 years. Growth may average 8-10 feet a year on vigorous beds. After 10-15 years, growth decreases and beds need to be re-established by removing roots and replanting (Morgenson 1992).

### **OUTPLANTING OF CUTTINGS**

- Cuttings will be obtained from clone banks, or in some cases from wild stock. The majority of material will generally be 1-2 year old, unrooted cuttings produced at the propagation areas. If rooted cuttings are desired, local nurseries would be contracted for this service.
- Material will generally be planted in the same subdrainage or like elevation (within 1,000') of the parent material. Areas in the lower John Day Basin, where few or no cottonwood clones are available, may be planted with material (of similar elevation) from other drainages or river basins to maximize diversity and therefore, the chances for successful establishment (Stettler 1994).
- A minimum 4'x 4' scalp to remove competing vegetation is recommended for planting site preparation.
- Deep planting (up to 5 feet) will be required in some cases to provide cuttings access to water table.
- Use a tree auger or digging bar to make the planting hole. After placing a cutting in the hole, tamp or otherwise fill the hole with soil or sand to prevent drying the cutting. Use tablet form fertilizer (Agriform) to provide trace element nutrients to cuttings developing root system and increase survival.
- Use area or individual tree fencing to protect the planted cuttings from wildlife and livestock. Individual tree fencing requires a 2-4 foot diameter woven wire cylinder, secured to 2-4 steel fence posts, encircling the tree. Small areas of riparian zones (less than one half acre) will be fenced to exclude livestock/and or wildlife use on native trees and shrubs. Fencing will either be woven wire (7-8 feet high) or 3-4 strand barbed wire (bottom wire 20 inches, top wire 40 inches, middle wire 28 inches) with steel posts.
- In order to accomplish successful regeneration of Black Cottonwood, the following criteria must be met: healthy, vigorous planting stock; suitable site selection and preparation; weed control and protection.

Outplanting only occurs in suitable areas, typically riparian in nature and small in extent. Total acreage planting in any given year would fall below 5 acres with a total of 100-1000 cuttings actually planted.

## **B. Monitoring**

Outplanting projects are monitored to determine success and evaluate the suitability of various clones for outplanting. The origin of outplanted tree material will be tracked to monitor survival of various clones at different planting sites. Each parent cutting is tagged and information is noted on where the parent material is from (i.e. drainage, elevation, county, etc.) As cuttings are taken from the parent material and outplanted they in turn are tagged with a number, this number is correlated to parent material type. On a yearly basis planting areas are visited and success and/or failure of plantings are noted. This information is used to determine viability of cut stock from various parent material and to determine conditions in which cut stock from various parent material responds optimally.

## **C. Actions for Coverage**

**NMFS & USFWS:** The BLM is not seeking coverage for any actions or guidance regarding instream riparian and aquatic enhancement structures at this time. Any future project proposals would reinitiate consultation with NMFS and USFWS to assess effects on listed species and their critical habitat.

**NMFS & USFWS:** The BLM is seeking coverage for the native hardwood outplanting program as described previously, which occurs every year on the Prineville District BLM. Many potential sites exist within the John Day River Proposed Management Plan boundaries as well as numerous sites outside the plan boundaries.

## **D. Summary of Effects and Effects Analysis**

In the effects section for clarity and easier reference a short table is included for all actions designating the effects finding described in further detail in the effects analysis. Within this table direct and indirect effects on steelhead and critical habitat are broken down. For each potential effect a determination has been documented. These notations include and are defined as: LAA - likely to adversely affect; NLAA - not likely to adversely affect; NE - no effect; and ND - no determination made at this time.

### **Riparian and Aquatic Habitation Restoration Enhancement Structures Effects Calls**

	Direct Impacts	Indirect Impacts
Affects on Steelhead	ND	ND
Affects on Critical Habitat	ND	ND
Affects on Bull Trout	ND	ND

The effects of construction and maintenance of structures for the protection, conservation, rehabilitation and enhancement of fish and wildlife habitat would be subject to site specific analysis. Generally, actions taken to stabilize river banks or to add aquatic structure to the river may result

in short-term reductions in or disturbances to riparian or aquatic vegetation. Longer term, the activities would likely increase the available habitat for riparian and aquatic species. Since no specific proposals are set forth in the John Day River Proposed Management Plan and subsequent proposals of this nature would initiate Section 7 ESA consultation no determination on potential affects of these types of projects will be made during this process, instead individual projects proposed during the life of this plan will be addressed in specific detail and effects determinations made during the consultation process at that time.

#### Native Riparian Hardwood Outplantings

	Direct Impacts	Indirect Impacts
Affects on Steelhead	NE	NLAA
Affects on Critical Habitat	NLAA	NLAA
Affects on Bull Trout	NE	NLAA

The effects of producing and outplanting cottonwoods and other riparian tree or shrub species are expected to increase the long-term sustainability of riparian species through the re-introduction of native genetic stock onto suitable habitats throughout the John Day River basin. This is expected to decrease the isolation of existing populations and increase the likelihood of successful sexual reproduction. Breadth, density and diversity of riparian plant communities is expected to increase. Changes resulting from the activities would include a long-term stabilization of river and stream banks due to increased root mass, an increase in the amount of shade, and an increase in the recruitment of large woody debris into the river and tributaries. Specific effects are detailed in an excerpt from Native Hardwood Supplementation Project Environmental Assessment (#OR-054-95-004) (USDI-BLM 1994a):

*Flood Plains - [The a]ction will improve flood plain function. Increased tree and shrub density will facilitate water velocity reduction in the near bank region at high flows. The subsequent sediment deposition will create seed beds for future vegetation colonization.*

*The presence of structural vegetation is a critical element for bank stabilization and excessive erosion abatement. Prevention of accelerated lateral and vertical streambank erosion will maintain current alluvial aquifer storage capacities. In many areas, increasing aquifer capacity is a likely long term result. Aquifer stored water is critical for augmenting the late summer/early fall flows in the John Day River.*

*It is unlikely that the action will cause decreases in water flows resulting from increasing vegetative evapotranspiration. The long term increase in aquifer storage capacity could potentially increase the amount of late season water available for beneficial use.*

*Fisheries/Wetland/Riparian/Water Quality - [The a]ction would improve overall water quality, hydrologic, wetland, riparian and fisheries values. Water will be withdrawn from the John Day near river mile 139 to irrigate the propagation area. Although this will divert 0.75 cfs (cubic feet per second) of water from the river, the benefits derived from the project should far outweigh the insignificant impacts to water quality. The nursery beds would need to be watered for a few hours every 5-7 days. (Subsequent proposals in the John Day River Proposed*

Management Plan replace this area with another area near Clarno (RM 108) where BLM also holds agricultural fields and associated water rights)

*Geology/Soils - [The action would enhance soil resources by stabilizing soils in riparian areas.*

Outplantings are small in scope and extent and make up a very minor percentage of actual public riparian corridor miles. Measurable differences in riparian conditions would be limited to specific sites with the potential to support such vegetation.

Potential impacts on fish and fish habitat result from:

- 1) increased filtration of water - thereby improving water quality parameters especially with regard to agricultural fields and surface runoff containing various chemicals such as fertilizers.
- 2) increased storage capacity and groundwater recharge - providing late summer season water sources to the river which would augment and enhance typical summer flows.
- 3) increased root masses - stabilizing banks and reducing sediment input to the river and providing important habitats such as overhanging or undercut banks used for cover.
- 4) allochthonous organic production which provides food specifically for fish and indirectly food for other aquatic organisms which fish eat.
- 5) shade production - buffering stream temperatures by reducing solar energy input which leads to reduced summer maximum temperatures, thereby lowering metabolic rates and increasing oxygen content within the water providing fish with a less environmentally stressful habitat.
- 6) dissipation of high stream flows - decreased velocity of high water through submerged riparian vegetation areas provides specific high flow refugia which allows fish to remain protected from high water velocities.

Though riparian and aquatic restoration activity can accelerate achievement of conditions needed to protect and enhance aquatic conditions which are the foundation of fish habitat, at best, 2 % of the stream and river banks in the John Day River basin would be affected. Because the vast majority of water flowing through the John Day River originates and flows through miles of streams managed by other landowners before it reaches areas within the scope of the plan, the ability of the cooperators to create measurable and significant changes in water quantity and quality and subsequent changes in fish populations is severely restricted.

The following description of effects to various baseline environmental indicators format has been prepared by the National Marine Fisheries Service and adopted by the BLM to address effects on anadromous fish habitat parameters. The Rationale for Checklist Ratings describes in detail the effects of the action on that indicator, the following Pathways and Indicators Matrix overlays baseline conditions as described in Chapter B for all segments of the plan area in conjunction with specific effects of the action on individual indicators. Baseline conditions are ranked into three categories: 1) Properly Functioning; 2) At Risk; or 3) Not Properly Functioning. The effects of the action on individual indicators is also ranked into three categories: 1) Restore; 2)

Maintain; or 3) Degrade. For the purposes of the effects analysis in this document restore is taken to be the effects of actions when those actions would take an indicator from not properly functioning or at risk to properly functioning. Likewise degrade is taken to be the effects of actions when those actions would take an indicator from properly functioning to at risk or not properly functioning. Actions within the maintain category would tend to maintain the indicator in its present condition; however, maintain activities can have beneficial, static or detrimental impacts that would not reach the level of changing and indicators overall condition. Where these types of actions occur they are denoted as X+ (maintain, beneficial), X (maintain, static) and X- (maintain, detrimental).

The Pathways and Indicators Matrix was applied to all types of steelhead habitats within the planning boundary. These types of habitats include, mainstem river, perennial tributaries, intermittent tributaries and ephemeral tributaries. The mainstem river was broken into 11 individual segments during analysis in the John Day River Proposed Management Plan, these divisions have been carried over to this analysis. In addition perennial, intermittent and ephemeral streams were divided by segment also. Each subsequent river or stream area was evaluated for baseline conditions (see Chapter B). Upon creation of the Pathways and Indicators Matrix it was noted that many stream areas had the same underlying baseline conditions, where this occurred these individual matrixes were combined with the assumption that actions would have the same affect on baseline indicators of like condition. All matrixes are included under each program for areas in which that program specifically occurs.

A few of the programs have similar effects on the baseline indicators regardless of what the baseline indicator condition is. For example riparian hardwood outplanting of cottonwoods, regardless of whether the baseline condition is properly functioning or not properly function will tend toward beneficial affects with regard to riparian structure and associated effects of improved structure. For these types of programs only one matrix is used and the individual baseline indicator conditions for all stream groupings are noted to demonstrate the full range of baseline conditions potentially impacted, while a singular rating on the effect of the action is noted in the effects area.

**Rationale for Checklist Ratings of Effects for Population and Environmental Indicators for Riparian Hardwood Outplanting Projects within the John Day River Corridor including mainstem river and tributary areas as outlined in Chapter 2.**

**Water Temperature:** According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Plantings of native hardwood species will improve riparian characteristics and thereby increase stream temperature buffering ability, while at the same time overstory growth will increase shade development.

**Sediment/Turbidity:** Plantings of native hardwood species will improve riparian sediment retention characteristics. Over time the result of plantings would be a decrease in instream sediment and deposition in establishing riparian areas.

**Chemical Contamination/Turbidity:** Plantings of native hardwood species will improve riparian filtration characteristics that over time would decrease the amount of chemicals entering the stream from upland sources in areas where plantings occur.

**Physical Barriers:** Plantings of native hardwood species will not create physical barriers to fish.

**Substrate Embeddedness:** Plantings of native hardwood species will improve riparian sediment retention characteristics. Over time the result of plantings would be a decrease in instream sediment and deposition in establishing riparian areas.

**Large Wood:** Plantings of native hardwood species will improve large wood presence.

**Pool Frequency:** Plantings of native hardwood species will improve riparian structure elements that can over time affect morphological characteristics and lead to an increase in pool frequency.

**Pool Quality:** Plantings of native hardwood species will improve riparian structure elements that can over time affect morphological characteristics and lead to an increase in pool quality through restoration of native vegetation more conducive to moisture maintenance and shade production.

**Off-Channel Habitat:** Plantings of native hardwood species will improve riparian structure elements that can over time affect morphological characteristics and lead to an increase in off channel habitat.

**Refugia:** Plantings of native hardwood species will improve riparian structure elements that can over time affect morphological characteristics and lead to an increase in spawning, rearing, and migratory habitat conditions for steelhead and chinook.

**Wetted Width/Max Depth Ratio:** Plantings of native hardwood species will improve riparian structure elements that can over time affect morphological characteristics and lead to restoring the width to depth ratio.

**Streambank Condition:** Plantings of native hardwood species will improve riparian structure elements that can over time improve streambank condition through better bank water storage and increased sediment deposition in areas which promote riparian functioning.

**Floodplain Connectivity:** Plantings of native hardwood species will improve riparian structure elements that can over time stabilize the riparian zones for flood events.

**Changes in Peak/Base Flow:** Plantings of native hardwood species will improve riparian structure elements that can over time improve flow regimes, by increasing bank storage capability and slowing release of water base flows in the summer can be augmented.

**Drainage Network Increase:** Plantings of native hardwood species will not effect the drainage network.

**Road Density and Location:** Plantings of native hardwood species will not effect road density or location.

**Disturbance History:** Disturbance history will not be effected by plantings of native hardwood species.

**Riparian Reserves:** As described in the environmental baseline section, no assessment of riparian potential has occurred. However, plantings of native hardwood species is designed to protect and improve the riparian areas.

Table 25. Checklist for documenting environmental base line and effects of proposed actions on relevant indicators for areas within the John Day River Management Plan boundaries with regard to Riparian Hardwood Outplanting projects.

<b><u>PATHWAYS:</u></b>	<b>ENVIRONMENTAL BASELINE</b>			<b>EFFECTS OF THE ACTION(S)</b>		
<b>INDICATORS</b>	<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>	<b>Restore</b>	<b>Maintain</b>	<b>Degrade</b>
<b><u>Water Quality:</u></b>	N/A	X	X		X+	
Temperature						
Sediment	X	X	X		X+	
Chem. Contam./Nut.	X	X			X+	
<b><u>Habitat Access:</u></b>	X, N/A	X			X	
Physical Barriers						
<b><u>Habitat Elements:</u></b>	X, N/A	X	X		X+	
Substrate						
Large Woody Debris	N/A	X	X		X+	
Pool Frequency	X, N/A		X		X+	
Pool Quality	X, N/A	X			X+	
Off-Channel Habitat	N/A	X	X		X+	
Refugia	N/A	X	X		X+	
<b><u>Channel Cond. &amp; Dyn:</u></b>	X, N/A	X	X		X+	
Width/Depth Ratio						
Streambank Cond.	X, N/A	X	X		X+	
Floodplain Connectivity	X	X			X+	
<b><u>Flow/Hydrology:</u></b>	X, N/A	X	X		X+	
Peak/Base Flows						
Drainage Network Increase	X	X			X	
<b><u>Watershed Conditions:</u></b>	X	X			X	
Road Dens. & Loc.						
Disturbance History	X, N/A				X	
Riparian Reserves	N/A				X	

\*\* In the maintain category X+ denotes effects which will maintain the indicator but which will have beneficial effects but not to the extent to restore the indicator, X- denotes effects which will maintain the indicator but which will have detrimental effects but not to the extent to degrade the indicator



**Answers to the Dichotomous Key For Making ESA Determination of Effects for Riparian Hardwood Outplanting projects in the John Day River Corridor containing mainstem and tributary reaches as defined in Chapter 2.**

**1. Are there any proposed/listed anadromous/resident salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?**

Yes, Summer Steelhead, and bull trout.

**2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?**

No, riparian hardwood outplanting strategies and applications were designed to attain or protect the relevant properly functioning indicators.

**3. Does the proposed action(s) have the potential to result in “take” of proposed/listed anadromous/resident salmonids or destruction/adverse modification of proposed/designated critical habitat?**

The proposed actions will not cause destruction or adverse modification of designated critical habitat. There is a probability of beneficial results occurring on critical habitat from riparian hardwood species outplanting in these areas. **Not Likely to Adversely Affect**

## **II. Fisheries**

### **A. Proposed Actions and Program Description**

Proposed management of the fisheries resource will be done via indirect means through various other resource programs that manage the vegetation component of stream areas, which in turn drive the condition of instream habitat resources. These other programs include: grazing, agricultural lands, and water quantity and quality. Direct fisheries habitat restoration actions would follow guidance identified under Riparian and Aquatic Habitat Restoration section. There are no proposed actions with regard to direct management of the fish resource therefore no determination on effects is noted.

### **B. Monitoring**

According to other approved Biological Opinions Terms and Conditions for PACFISH areas the Prineville BLM will conduct Implementation, Effectiveness and Validation Monitoring with regard to management actions. These monitoring efforts will be in conjunction with modules as prepared by the Interagency Implementation Team. The results of this monitoring will be reported to NMFS on an annual basis. In addition to program monitoring the Prineville BLM will:

1. Identify which specific stream reaches within or adjacent to the BLM managed lands currently provide suitable spawning habitat for mid-Columbia River (MCR) steelhead.
2. Determine time frames during which MCR steelhead could be expected to utilize those stream reaches for spawning and during which eggs and pre-emergent fry would be expected to be present in the stream gravels.
3. Prioritize the sensitivity of those stream reaches to management impacts based on Rosgen's stream channel types and the quantity, quality, and concentration of MCR steelhead spawning habitat within each stream reach.
4. Provide this prioritized list of stream reaches covering at least 40% of the affected streams to the Level I Interagency Streamlining Consultation Team by the end of 2001, and the remaining 60% by the end of 2002.
5. With regard to grazing, if unauthorized use occurs within an allotment or pasture prior to July 15 the permittee will be notified to remove livestock immediately and NMFS will be notified of occurrence within 24 hours.
6. Update information on riparian vegetative conditions along streams and in areas for which information is older than 10 years.

### **C. Actions for Coverage**

**NMFS & USFWS:** There are no specific actions addressed in the plan regarding fisheries management. All actions which affect fish and fish habitat indirectly are addressed in other programs. The BLM is not seeking any coverage under this program.

#### **D. Summary of Effects**

##### Fish

	Direct Impacts	Indirect Impacts
Affects on Steelhead	ND	ND
Affects on Critical Habitat	ND	ND
Affects on Bull Trout	ND	ND

There are no actions therefore there are no effects. If actions under this alternative should be proposed in the future, consultation would be initiated to assess the effects of those actions.

### **III. Water Quantity and Water Quality**

#### **A. Proposed Actions and Program Description**

Proposed management of water quality and quantity centers around cooperative efforts to increase water quantity and decrease pollutant or sediment input with regard to water quality. The BLM is proposing to adopt recommended flows identified in the John Day River Scenic Waterway Flow Assessment as provisional instream flow goals for the John Day River Plan. These flow levels were identified to support recreation needs (OWRD 1986), and meet or exceed optimal flows for anadromous fish (Lauman 1977).

There are currently many independent and cooperative efforts underway to improve water quantity and quality in the John Day basin. These efforts are in the form of coordination with local Watershed Councils, private landowners, Tribal Governments, Soil and Water Conservation Districts, the Natural Resources Conservation Service, the USDA Forest Service, the Oregon Department of Fish and Wildlife, the Oregon Department of Water Resources, the Oregon Department of Agriculture and the Oregon Department of Environmental Quality and are not typically carried out on BLM administered land areas, the BLM serves strictly in an advisory capacity for most of these cooperative projects. These efforts would continue under proposed management. The following are examples of recent cooperative efforts that would individually or cumulatively protect and enhance water quantity and water quality, and fisheries:

- Establishment of instream water rights.
- Water sharing agreements between private landowners, OWRD and ODFW.
- Push-up dam removal and diversion modification (such as infiltration galleries).
- Irrigation efficiency projects - conversion from flood to sprinkler or gated pipe.
- Riparian fencing projects.
- Fencing and spring developments to implement grazing systems that improve and maintain riparian and upland vegetation.
  - Fish screening of irrigation systems.
  - Off-channel or headwater check dams.
  - Juniper and noxious weed control.
  - Prescribed burning.
  - Wildlife food and cover seeding.
  - Riparian plantings.

The proposed action would facilitate the John Day River planning partners (BLM, State of Oregon, and the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO)) to coordinate and identify, prioritize, and facilitate actions that would help achieve the identified flow goals and state water quality requirements. The information sharing process would be open to tribal, local, state, federal, business/industry, recreational, and conservation/environmental representation to:

- Develop basin-wide priorities and recommendations for water quantity and quality improvement projects and practices.
- Provide guidance and technical assistance to cooperative individuals and groups, such as Watershed Councils.
- Coordinate funding sources to assist in implementing identified projects.
- Modify long-term goals and specific management practices based on results of monitoring, new information, or meaningful changes in conditions.

The adoption of John Day River State Scenic Waterway flow recommendations serve as a goal to direct cooperative efforts to achieve those flows. State Scenic Waterway flows are not water rights, rather, flow levels included by the Oregon Department of Water Resources in its calculations of water availability for future consumptive uses. State Scenic Waterway recommended flows do not ensure live flow in the river during low flow times, but they do serve as a goal to strive for through better resource management. Instream water rights for fish have been issued for some segments of the John Day River system. These rights are subject to senior priority appropriations and do not actually ensure that flows are present for fish protection during critical life cycle stages. When flows are available, however, existing instream rights protect that flow from junior priority consumptive rights.

Existing Oregon Department of Environmental Quality policy requires that a Water Quality Restoration Plan be formulated for all water quality limited rivers and streams in Oregon (Oregon Department of Environmental Quality 1997). A Water Quality Restoration Plan(WQRP) for the federally listed Wild and Scenic River areas (Segments 1, 2, 3, 10 & 11) is being prepared according to existing guidance (USDA-FS and USDI-BLM 1999). This WQRP will not designate any further implementation actions outside of possible designation additional monitoring sites. The WQRP is a reformatting and re-organization of the John Day River Proposed Management Plan that will specifically and succinctly describe how actions proposed in the plan aggregate to form the specific parts of a WQRP. The Oregon Department of Environmental Quality is also scheduled to establish total maximum daily loads (TMDLs) for the Middle Fork, North Fork, Upper, and Lower John Day River subbasins in the years 2002, 2003, 2004 and 2005, respectively. The BLM will be an active participant in the development of these plans.

Further guidance would be obtained from ongoing directives and programs such as the Strategic Plan for Managing Oregon's Water Resources 1999-2001 (OWRD 1999), Water Resources Department - John Day Basin Program (OAR 1998), Oregon Conservation Reserve Program (Ringer 1998), Accelerating Cooperative Riparian Restoration and Management (USDA-FS, USDI-BLM, and USDA-NRCS 1997), Environmental Quality Incentives Program (USDA-NRCS 1996), Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (USDA-FS and USDI-BLM 1995), and Strategy for Salmon (Collette and Harrison 1992).

## **B. Monitoring**

Within the basin, water temperature is monitored at various sites. Typically continuous recording devices are used to establish a comprehensive data set, however, some areas have been monitored less intensively using a one-point-in-time temperature assessment. A network of United States Geological Survey (USGS) and OWRD gauging stations are employed in the John Day basin and provide stream flow data and, in some cases, continuous water and air temperature data. In addition, BLM uses continuous recording devices to monitor water temperature across the basin, and utilizes data from other sources as it is available to manage for river values. Specific sites monitored continuously in the river corridor include: the mainstem John Day River at rivermile 15, Service Creek, Kimberly, Picture Gorge, and the forest boundary; the North Fork John Day River at Lonepine campground, Wrightman Canyon and the forest boundary; the Middle Fork John Day River at the mouth and at the forest boundary; the South Fork of the John Day River at the gauging station above Dayville, Black canyon, upper end of the Rockpile allotment, Izee Falls, the Post/Paulina Highway crossing and the forest boundary.

Riparian area trends are indirect indicators of water quality and were chosen to be monitored because the riparian zone affects many of the designated uses for water. Riparian vegetation is a contributing factor of stream temperature, bank erosion, channel morphology, fish rearing habitat, large woody debris input, and for controlling the amount of sediment and nutrients reaching the stream from up-slope sources. The BLM's approach has been that by monitoring trends in the John Day River riparian areas, and being able to demonstrate an upward trend based on potential of the site, the BLM is maintaining or improving water quality on a non-point source basis. Riparian areas have been monitored along the mainstem (down to river mile 15.0), South Fork, North Fork and Middle Fork John Day Rivers. New study sites will be established as needed.

### **C. Actions for Coverage**

**NMFS & USFWS:** The BLM is not proposing any on-the-ground actions in this program. Proposed management within this program institutes flow goals in the mainstem State Scenic Waterway corridor and encourages coordination with the John Day planning partners to work cooperatively to achieve those goals. These proposals involve administration efforts that may lead to on-the-ground improvements over time. Actions associated with this program do not qualify as 'may effect' actions, therefore the BLM is not seeking any coverage of this program.







#### Water Quantity and Water Quality Actions

	Direct Impacts	Indirect Impacts
Affects on Steelhead	NE	NE
Affects on Critical Habitat	NE	NE
Affects on Bull Trout	NE	NE

The specific actions addressed in this program are administrative and do not designate any on-the-ground project type work. The BLM is not seeking coverage of these actions since they are No Effect in nature and do not describe any on-the-ground actions. The purpose for inclusion of this section is to describe in a holistic fashion all management direction and actions the Prineville BLM is proposing through the John Day River Proposed Management Plan.

The elements of water quantity and quality that affect fish include: quantity of water, chemical and nutrient levels, and temperature. Water quantity impacts fish through the volume of water within the stream. The higher the volume the more buffering capability water has to reduce impacts to fish from changes in air temperature, solar radiation input, or introduced chemicals or nutrients. In addition higher water volume allows fish to overcome barriers that are impassable at lower flows. Chemical and nutrient levels can affect fish. Excessive pollutants such as gas and oil will kill fish at very low concentrations. Low levels of available oxygen can increase stress, limit function, and over a sufficient period can lead to mortality. Stream temperature determines metabolic rates and oxygen saturation levels. Decreased levels of specific chemicals and decreases in water temperature can improve fish habitat and remove or reduce some stressors.

Continuing cooperative and coordinated efforts enable watershed landowners to identify pollutant sources and pool resources to reduce inputs. These efforts would contribute to increased water quantity and reduced introduction of sediment and other pollutants, and lower water temperature during warmer periods of the year.

The OWRD recommended flows for State Scenic Waterways would provide sufficient water quantity and water quality through dissipation and buffering of other water quality parameters such as chemical or nutrient levels and instream temperatures to provide for migration, spawning, and rearing of anadromous fish (Lauman 1977) at appropriate times compared to existing conditions. Adopting the State Scenic Waterway recommended flows constitutes a benchmark against which progress toward providing adequate riparian habitat for anadromous fish can be measured. This would affect Segments 1, 2, 3, a portion of Segment 4 and 7, 8, 9, and 10 which contain portions of the designated State Scenic Waterway where recommended flows have been calculated.

**Rationale for Checklist Ratings of Effects for Population and Environmental Indicators for Water Quality and Water Quantity guidance within the John Day River Corridor including mainstem river and tributary areas as outlined in Chapter 2.**

**Water Temperature:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues may lead to increases in instream flow that would buffer this indicator over time.

**Sediment/Turbidity:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues may lead to increases in instream flow that would buffer this indicator over time.

**Chemical Contamination/Turbidity:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues may lead to increases in instream flow that would buffer this indicator over time.

**Physical Barriers:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues will not create physical barriers to fish.

**Substrate Embeddedness:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues may lead to increases in instream flow that would buffer this indicator over time.

**Large Wood:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues will not affect large wood presence.

**Pool Frequency:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues will not affect pool frequency.

**Pool Quality:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues will not affect pool quality.

**Off-Channel Habitat:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues will not affect off channel habitat.

**Refugia:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues will not affect spawning, rearing, and migratory habitat conditions for steelhead, chinook or bull trout.

**Wetted Width/Max Depth Ratio:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues will not affect the width to depth ratio.

**Streambank Condition:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues will not affect streambank condition.

**Floodplain Connectivity:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues will not affect floodplain connectivity.

**Changes in Peak/Base Flow:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues may lead to increases in instream flow that would buffer this indicator over time.

**Drainage Network Increase:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues will not effect the drainage network.

**Road Density and Location:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues will not affect road density or location.

**Disturbance History:** Administrative coordination of John Day planning partners with regard to water quality and quantity issues will not affect disturbance history.

**Riparian Reserves:** As described in the environmental baseline section, no assessment of riparian potential has occurred. However, administrative coordination of John Day planning partners with regard to water quality and quantity issues is designed to protect and improve the riparian areas.

Table 24. Checklist for documenting environmental base line and effects of proposed actions on relevant indicators for areas within the John Day River Management Plan boundaries with regard to Water Quality and Water Quantity actions.

<b><u>PATHWAYS:</u></b>	<b>ENVIRONMENTAL BASELINE</b>			<b>EFFECTS OF THE ACTION(S)</b>		
<b>INDICATORS</b>	<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>	<b>Restore</b>	<b>Maintain</b>	<b>Degrade</b>
<b><u>Water Quality:</u></b>	N/A	X	X		X+	
Temperature						
Sediment	X	X	X		X+	
Chem. Contam./Nut.	X	X			X+	
<b><u>Habitat Access:</u></b>	X, N/A	X			X	
Physical Barriers						
<b><u>Habitat Elements:</u></b>	X, N/A	X	X		X+	
Substrate						
Large Woody Debris	N/A	X	X		X	
Pool Frequency	X, N/A		X		X	
Pool Quality	X, N/A	X			X	
Off-Channel Habitat	N/A	X	X		X	
Refugia	N/A	X	X		X	
<b><u>Channel Cond. &amp; Dyn:</u></b>	X, N/A	X	X		X	
Width/Depth Ratio						
Streambank Cond.	X, N/A	X	X		X	
Floodplain Connectivity	X	X			X	
<b><u>Flow/Hydrology:</u></b>	X, N/A	X	X		X+	
Peak/Base Flows						
Drainage Network Increase	X	X			X	
<b><u>Watershed Conditions:</u></b>	X	X			X	
Road Dens. & Loc.						
Disturbance History	X, N/A				X	
Riparian Reserves	N/A				X	

\*\* In the maintain category X+ denotes effects which will maintain the indicator but which will have beneficial effects but not to the extent to restore the indicator, X- denotes effects which will maintain the indicator but which will have detrimental effects but not to the extent to degrade the indicator

**Answers to the Dichotomous Key For Making ESA Determination of Effects for Water Quality and Water Quantity actions in the John Day River Corridor containing mainstem and tributary reaches as defined in Chapter 2.**

**1. Are there any proposed/listed anadromous/resident salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?**

Yes, Summer Steelhead and bull trout.

**2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?**

No, water quality and quantity strategies and applications were designed to attain or protect the relevant properly functioning indicators.

**3. Does the proposed action(s) have the potential to result in “take” of proposed/listed anadromous/resident salmonids or destruction/adverse modification of proposed/designated critical habitat?**

The proposed actions will not cause destruction or adverse modification of designated critical habitat, or result in take of any listed species within the area. **No Effect**

## **IV. Noxious Weed Control**

### **A. Proposed Actions and Program Description**

The proposed action is to continue to implement the current Integrated Weed Management (IWM) program. This action emphasizes a proactive (all available control methods) ecosystem based approach for control (eradication) of noxious weeds on all public lands within the Prineville District. The principle feature for an ecosystem-based approach to an IWM program is the coordination and cooperation of noxious weed control efforts on all affected lands (public, state or private). Generally, BLM policy limits its efforts for treating only public lands, but BLM's fiscal year 1997 appropriations bill sponsored by Senator Wyden (also known as the Wyden Amendment) gives greater flexibility for treatment on non BLM lands including private lands, especially where partnerships exist. The main feature of BLM's coordination and partnership efforts will be adjacent federal, state (ODA and ODFW), and private IWM efforts in cooperation and coordination with the county weed departments. Public education, prevention practices and techniques and extra detection efforts are emphasized. IWM control measures will be available to be used on all District public lands to include: Wilderness Study Areas (WSA's), Wilderness Areas (WA's), Areas of Critical Environmental Concern (ACEC's), Research Natural Areas (RNA's) Wild and Scenic River Corridors (WSR) and recreation sites. The IWM control measures used include Cultural Practices (preventative), Physical Control Practices, Biological Control Practices and Chemical (herbicide) control practices. The following is a description of these practices as described in the Prineville District Integrated Weed Management EA (USDI-BLM 1994c) and the Lower John Day River Integrated Weed Management EA (USDI-BLM 1996d):

*These efforts are focused on both indirect Cultural (preventative) actions and direct Physical, Biological or Chemical actions on the weeds themselves, such as hand pulling, discing, prescribed fire, biological control agent (insect, pathogens) releases or herbicide applications. The indirect actions focus on the site specific environmental or biophysical aspects. These indirect actions tie into the social and human behavior aspects of the particular weed problem focused on enhancing the natural controls, modifying people's attitudes for the needed or required maintenance activities to prevent establishment of a weed or a change of environmental requirements needed by the weed (Hoglund 1991). These activities are the focus of Cultural Practices.*

*Direct actions (treatments) are targeted to actions on the specific weeds themselves.*

#### **Cultural Practices**

*Cultural Practices as summarized and listed below. They are both indirect and direct practices designed to minimize the spread of existing infestations, but also to prevent weed establishment. These cultural practices are a key component of the District's IWM, and are not only the best control practices, but are also some of the most effective and cheapest long term practices. These cultural practices will be used wherever possible, to reduce the risk of unknown sources of contamination, reduce spread (seed sources) and identify new infestations.*



1. *Clean all heavy equipment used on BLM land (including Rights-of-Ways) prior to moving onto BLM lands or before changing geographic areas.*
2. *Require weed free hay for the feeding of hay to livestock and big game animals on the public lands. Inspect all feeding sites during the summer after they are used.*
4. *Use only certified seed that has been checked for noxious weed seed prior to seeding public lands (Cook 1991).*
5. *Reclaim disturbed sites/areas as soon as practical with a BLM approved seed mixture. Temporary fencing of newly seeded sites within grazing allotments may be required to assure establishment of new seeding. Sites should be rested from grazing for at least two growing seasons after planting per BLM policy(USDI-BLM 1998d).*
6. *Monitor all vegetation manipulation and revegetation projects, i.e. prescribed fire areas, timber harvest activities, seedings, juniper control areas or other disturbed sites like rock (material) pits for noxious weed infestations and initiate control efforts as needed. "Activities that cause bare soil on range and pastureland should be minimized" (Leininger 1988).*
6. *To reduce the areas of enhanced opportunity for potential noxious weed invasion, evaluate sites within the priority treatment zones for vegetative management practices and initiate changes in management in those zones where native or seeded vegetation is in a downward trend(See Table 1).*

**Table 1. District Priority Treatment Areas or Zones**

<i>Priority</i>	<i>Description of Area</i>
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*Areas adjacent to private agricultural croplands.*

*Areas on or adjacent to major public rights-of-ways: Federal, state and county highways and associated gravel stockpile sites, railroads, ditches, canals, pipelines (PGT) and power lines (BPA and local utilities).*

*Areas within WSA's, WA's, ACEC's and TNA's not treated previously.*

*BLM managed administrative sites such as office, warehouse, storage or fire guard stations, developed recreation sites or campgrounds, as well as primitive undeveloped campgrounds and recreational areas along the lower John Day River and lower Deschutes River.*

*All other rights-of-way, BLM roads, reservoirs and springs, areas adjacent to rivers, especially lower Deschutes River and John Day River, streams, canals, and riparian areas.*

*All remaining affected public lands.*

7. Limit, restrict or discourage recreational, especially ORV use in weed infested areas (Leininger 1988).

### **Physical Control Practices**

*Physical control practices are manual, mechanical and prescribed Fire*

*Manual control practices (hand pulling and hand grubbing with hand tools such as shovel, hoe, pulaski) are usually highly labor intensive, often requiring periodic retreatment efforts within the same growing season. In addition, manual practices may include the need to collect plant residue (dependent upon site, species and plant maturity) by bagging or piling and burning, for proper disposal. They may be relatively ineffective against deep rooted perennials such as Leafy Spurge, Dalmation Toadflax, Russian Knapweed, Purple Loosestrife or Rush Skeleton Weed. Best results are often on small satellite patches of a few plants to less than 1 acre, and targeted to annual and biennial noxious weeds. Depending upon the targeted weed species, it may also be one of the few currently available options for control within riparian areas and areas very close to water.*

*Manual control efforts (hand pulling and hand tools) would be limited to less than 5 acres per infestation site. Control efforts may be permitted after Resource Area staff review of the same site specific information and/or mitigation stipulations as required for Pesticide Use Proposals (PUPS) (discussed under Chemical Control Practices) and Resource Area management approval.*

*Manual control practices may be used immediately, to prevent or reduce establishment of a weed seed source, where newly discovered sites involve just a few plants. All mechanical control practices (such as mowing, tilling, discing, plowing or competitive seedbed preparation activities) would require proper timing. They often require repeated periodic retreatment within the same growing season or a yearly repeat the following season. These practices are often used in combination with other actions such as prescribed fire (before) and seeding (after) mechanical practices are used. These methods are highly disruptive to surface soil characteristics and vegetation including desirable native shrubs, non-targeted grasses and forbs species. Some perennial weeds are not treatable in this way due to their ability to spread by roots. Slopes are a limiting factor for the application of these methods and slopes greater than 10 percent are not recommended for mechanical treatment. All mechanical control surface soil disturbing practices such as mowing, tilling, discing, plowing or competitive seedbed preparation activities would require a separate site specific environmental assessment.*

*Prescribed fire is considered a control method under Physical Control Practices. This practice is very much a part of the District's IWM and is used both as a practice by itself (dependent upon target weed and site characteristics) and as tool combined with other before and after practices for noxious weed control. Fire as a tool by itself is often not effective in eradication of most weed species and may open up areas for increased weed infestations. It will be used as a clean up tool for piles of weeds collected for proper disposal under manual or mechanical methods. It will most often be used as a site preparation tool for small (less than 5 acres) sites or sites 5 acres to hundreds of acres in size. This site preparation generally consists of burning off*

*noxious weed vegetation in fall-winter months to remove dead, matted vegetative material (such as Medusahead Rye or Russian Knapweed); reduce seed levels; open up dense stands of dead weed stalks (such as Scotch Thistle) for physical access. (The District Prescribed Fire and Fire Rehabilitation Programs, while often done in conjunction with noxious weeds projects are treated separately in this assessment.)*

*After a stand is cleaned up, the amount of time and work effort required by other practices is often less than if prescribed fire had not been used.*

*In follow up applications of herbicides, generally the amount of herbicide required for treatment is less and application is more effective on newly sprouting noxious vegetation or seedlings not protected by old plant residue.*

*All prescribed fire over 5 acres in size would require a separate site specific analysis.*

*All prescribed fire activities would be conducted in accordance with BLM's Fire Management Policy (USDI-BLM 1988a). All prescribed fires would require the preparation of an approved prescribed burn plan before every burn. The burn plan must be approved by the District Fire Management Officer and Resource Area Management. In addition, all required smoke management stipulations or burning permit requirements would be part of the approved prescribed burn plan.*

*Physical access is often required as part of site preparation for the application of other control methods such as manual or mechanical practices, removal of weed debris, burning or hauling, prescribed fire, competitive seeding or application of herbicides. For all areas with some previous trail or road allowing vehicle access, OHV vehicles will be used for access to provide emergency treatments of noxious weeds. The OHV vehicles will be used also on the larger alluvial flats for herbicide application. Helicopter application next to the river is limited by required buffers.*

## **Biological Control Practices**

*Biological Control Practices are either introduced or natural competition. These can be insects, pathogens, native or non-native competitive seedlings (certified seed only) and grazing by domestic livestock (sheep, goats, cows, geese or others). The District is primarily using both insects and competitive seedlings. Domestic grazing as a control practice would have to meet specific allotment management resource and grazing objectives. (Grazing programs are being treated separately through a separate consultation process)*

*Competitive seedlings using either native or introduced species, if using mechanical seedbed preparation then seeding practices are subject to a separate site specific analysis. If seeded sites are greater than 5 acres they would also require a separate site specific analysis. Seeding these small sites may be permitted after Resource Area staff review of the same site specific information and/or mitigation stipulations as required for Pesticide Use Proposals (Pups) (see Chemical Control Practices) and Resource Area management approval. The District's use of its approved Biological Control Agents for treatment priorities will be coordinated closely with the*

*ODA to introduce biological control agents to weed populations where site specific criteria meets management goals. Most BLM priority weeds listed do not have ODA approved biological control agents available for control efforts.*

*The list of currently approved District Biological Control Release Proposals (1993) submitted by ODA for this District under BLM/ODA contract #1422h952-C-22073 ...have met all environmental testing criteria for host species, per requirements and an EA is on file with USDA and Oregon State Dept. of Agriculture.*

*However, immediate control/eradication is not possible since eradication is not feasible using biological control agents alone. It is a slow and long process that will be used by the District for slowing the spread and containment of larger established populations.*

*Biocontrol effectiveness "works best on large weed concentrations and worst on isolated patches" (Kummenow 1992). "Biocontrol is no cure-all. Many exotic species aren't amenable to it; sometimes the recruits turn out to be duds; and it's often difficult and expensive to find the right agent - four to six years of research carrying a price tag of \$1 million for each target alien" (noxious weed) "is typical" (Devine 1994).*

*The biological control agent release sites will be coordinated through the ODA, County Weed Districts or Weedmasters and BLM Resource Area offices per stipulations of the District approved Biological Control Agent Release Proposals (BCARPs).*

*The District Wide BCARPs have been approved for biocontrol agents dispersal, dependent upon availability of agent and upon specific release sites being selected. Those sites selected will and need to be protected from disturbances due to other various management actions. That protection will ensure that the biocontrol agents released will have a good chance of establishing viable populations for both control activities at the site and acting as biocontrol nursery for collection and redistribution to other sites.*

### ***Chemical Control Practices***

*Chemical Control Practices include the use of pesticides and herbicides including 2,4-D; Dicamba; Dicamba + 2,4-D; Picloram (Tordon); Picloram + 2,4-D; Glyphosate (Rodeo or Accord only); and Glyphosate + 2,4-D) and Fertilization.*

*Chemical Practices using any herbicide applications on District require submission of a Pesticide Use Proposal (PUP) at the Resource Area / District level and then BLM State Office approval or in a few specific cases (due to location or selected herbicide/noxious weed targeted) U.S. Dept. of Interior approval (Information Bulletin No. 93-407). PUPS are required to be reviewed by the Resource Area staff and approved by the Resource Area management prior to submission for State office approval. The Resource Area offices will review or provide site specific information and/or mitigation stipulations concerning:*

- 1. Special Status plants and animals.*
- 2. Archeological Resources*

3. *Vegetation, soil and water resource concerns*
4. *Fish and wildlife concerns*
5. *Special Management Area concerns*
6. *Other resource site specific mitigation concerns*

*Most of the District's herbicide applications are currently being applied as minor spot treatments along highway and county road rights-of-way, or recreational sites. Additional sites are pending as a backup to other IWM practices such as prescribed fire and seeding activities.*

*The currently BLM approved herbicides are 2,4-D; Dicamba; Dicamba + 2,4-D; Picloram (Tordon); Picloram + 2,4-D; Glyphosate (Rodeo or Accord only); and Glyphosate + 2,4-D. Additional herbicides which have been analyzed, evaluated and subsequently approved for vegetative treatment on BLM lands but which are not listed under a court injunction for use include: Atrazine, Bromacil, Bromacil + Diuron, Chlorsulfuron, Clopyralid, Diuron, Hexazinone, Imazapyr, Mefluidide, Metsulfuron Methyl, Simazine, Sulfomefuron Methyl, Tebuthluron and Triclopyr. Application of any of these herbicides must be in accordance with all label stipulations and consistent with Project Design Features as described in USDI-BLM FEIS Vegetation Treatment on BLM Lands in Thirteen Western States, 1991, and Weed Management Treatments and Design Features as described in USDI-BLM FEIS Northwest Area Noxious Weed Control Program 1985.*

In accordance with guidance and directives application of any chemical is done with specific standards and operating procedures. The follow excerpts from a 1991 publication - USDI-BLM FEIS, Vegetation Treatment on BLM lands in Thirteen Western States and a 1985 publication - USDI-BLM FEIS - Northwest Area Noxious Weed Control Program describe Project Design Features and Weed Management Treatment and Design Features respectively.

USDI-BLM 1991 FEIS - Vegetation Treatment on BLM Lands in Thirteen Western States:

### ***Project Design Features***

*Project design features are intended to ensure the proper and safe implementation of treatment methods. This includes proper and safe application of herbicides on BLM lands in the program States as required by Federal, State, and regional procedures. Federal and State laws and regulations set minimum standards to follow when applying herbicides on Government-owned forests and rangelands. Each regional and district office may develop additional restrictions and precautions.*

*Disposal of hazardous waste from these projects will be minimized in a number of methods. Because a large portion of the pesticide use in BLM is under contract, all contracts will specify that all containers be removed from BLM administered lands and disposal of these containers under EPA guidelines is the responsibility of the contractor. Where BLM is the applicator, only the amount of pesticide needed for the project is purchased and stored. Guidelines for storage is*

*provided in BLM Manual Section 9011. Excess pesticides should be used for the intended use and any rinsate from pesticide storage cans and equipment should be applied to the project site. Further, guidelines for storage, transportation, and disposal is provided in BLM Section 9011 Handbook, and on the label for specific pesticides.*

*Some specific examples of project design features include the following:*

### ***Herbicide Treatments***

- (1) Application operations will typically be suspended when any of the following conditions exist on the treatment area:*
  - (a) Wind velocity exceeds 6 miles per hour for the application of liquids or 15 miles per hour for the application of granular herbicides, or as specified on the label (whichever is less).*
  - (b) Snow or ice covers the target foliage.*
  - (c) Precipitation is occurring or is imminent.*
  - (d) Fog significantly reduces visibility.*
  - (e) Air turbulence (for example, thermal updrafts) is sufficient to affect the normal chemical distribution pattern.*
- (2) During air operations, a radio network will be maintained to link all parts of the project.*
- (3) Equipment will be designed to deliver a median droplet diameter of 200 to 800 microns. This droplet size is large enough to avoid excessive drift while providing adequate coverage of target vegetation.*
- (4) Individuals involved in the herbicide handling or application will be instructed on the safety plan and spill procedures.*

*Other general mitigation that pertain to treatment methods and alternatives described in this final EIS are as follows:*

- (1) Herbicides with high health and safety risks would be limited in use. Other herbicides and other types of treatment that are viable alternatives would be used. Whenever possible, less than maximum application rates will be used that will still meet the needs to effectively control or eradicate target species.*
- (2) Select herbicides with minimum toxicity to the significantly affected fish and wildlife species in the potentially affected treatment area, while maintaining adequate toxicity to the target plant species.*
- (3) A preventative maintenance program will be incorporated as part of each project treatment proposal that would help guard against reencroachment of undesired plant or shrub species.*
- (4) Protective buffer zones will be provided along important riparian habitat not designed to be treated and along streams, rivers, lakes, wetlands, and xeroriparian areas along important dry water courses.*
- (5) In situations when control of the location of aerial spray is critical, as in buffers to riparian and aquatic areas, and when control of the configuration of the treatment area is necessary for the success of the project (e.g. spraying around*

*meadows and in sagebrush when sage grouse habitat could be impacted), spraying should be accomplished by helicopter.*

- (6) When significant impacts to fish from application of herbicides are likely, the following mitigation is recommended: a) Application will avoid time periods when fish are in life stages most sensitive to herbicide impacts (egg, larvae, and smolt) in waters adjacent to the application areas; b) Emphasize spot spraying or other methods of treatment near streams, especially important fisheries; c) Reduce frequency and rates of application of herbicides betiding application to the most vulnerable phenological events of the target plant species; d) Select herbicides with minimum toxicity to potentially affected fish and other aquatic wildlife species in the treatment area, or area potentially affected, while maintaining adequate toxicity to the target plant species; e) Minimize use of chemicals that might have adverse impacts on aquatic habitats; f) Establish contingencies through the Safety Plan for immediate reaction and mitigation in the case of accidental spills, unplanned drift, or other serious environmental accidents impacting important streams and water bodies.*
- (7) Periods of treatment should avoid the bird nesting season and other critical seasons when loss of cover would be critical to wildlife; e.g. during critical reproductive periods and prior to severe winter weather conditions. Application of diesel fuel as a carrier of herbicides, to bird eggs, and young of any wildlife species, should be avoided.*
- (8) Prior to herbicide applications, any managed apiaries (honey bee colonies) in the vicinity will be notified in advance to allow time for removal or other protection of the hives.*
- (9) Precautions will be taken to assure that equipment used for storage, transport, and mixing or application will not leak into water or soil creating a contamination hazard.*
- (10) Helicopter ferrying routes between the staging area and spray area will be planned to avoid flights over aquatic systems and human habitation.*
- (12) Monitoring of mitigation effectiveness will be conducted.*
- (13) Areas with high risk for ground water contamination would not likely be included to receive herbicide treatments, particularly if those areas serve as domestic water sources. All areas considered for herbicide application would be evaluated in terms of the EPA's DRASTIC index that estimates the potential vulnerability to ground water contamination. The DRASTIC index uses site factors including soil permeability, underlying geologic characteristics, depth to water, and recharge potential. Generally, an area with a rating above 100 is considered to be of moderate to high risk. Care should be taken to make sure the DRASTIC system is applied properly at the site treatment level.*

*If it is determined that high risk areas require herbicide treatment, those areas would be further evaluated to determine the conditions that would allow herbicide application without loss of the herbicide from the root zone. Such analysis (Carsel et al. 1984) would require information on the herbicides solubility, mobility, speciation, and degradation factors. In addition, site recharge would be evaluated to determine areas that may have high recharge zones, such as those where small amounts of precipitation concentrate in a*

*depression because of surface and subsurface runoff. High risk recharge zones would generally not be considered for herbicide treatment.*

*Project plans would generally include the use of applicable BMPs where they exist. State water quality regulators could review all vegetation treatment plans and environmental analyses.*

- (14) When application and timing of herbicide spraying could cause a hazard for human consumption of wild game taken by sport hunters, the spray area should be adequately posted to warn hunters of the potential hazard.*
- (15) When transporting herbicide mixes on forest roads within domestic/municipal, fish hatchery, or irrigation supply watersheds, tanker trucks will use a pilot vehicle. Tanker drivers shall know the Spill Incident Response Plan.*
- (16) Standards and guidelines in BLM Handbook Section 9011 (Pesticide Storage, Transportation, Spills, and Disposal) Section II will be met. This defines standards for storage facilities, posting and handling, accountability, and transportation. It covers spill prevention, planning, cleanup, and container disposal requirements.*

#### *Other Treatments*

- (1) Treatments such as tilling and chaining will be designed and landscaped to minimize the negative impacts on aesthetic values. In the case of tree chainings, consideration will be given to salvaging the woodland products and then burning the remaining dead material in an effort to minimize the negative impact on the visual resource.*
- (2) Irregular boundaries for maximizing edge effect will be incorporated into all methods of treatment. Undisturbed islands of natural vegetation will be left, where appropriate, to minimize negative impacts to the wildlife community.*
- (3) Especially in the case of mechanical treatment, care will be taken to assure that excessive land slope, unfavorable soil conditions, etc. do not contribute to long-term accelerated erosion conditions. In most cases, treatments should be confined to the more gentle slopes and ideal soil conditions which will generally result in reduced soil erosion.*

#### **Special Precautions**

*Special provisions for treatments would be selected according to the scope of the action and the physical characteristics of the specific site. BLM manual sections and handbooks provide a variety of approved standards and special provisions for renewable resource improvements and treatments (USDI-BLM 1981a, 1985c, 1985d, 1987b). Periodically, BLM updates recommended proposals for pre- and post-treatments. There are other precautions taken in consideration of special status species, wilderness, and cultural resources, as described below.*

#### *Special Status Species*

*Federal policies and procedures for protecting endangered and threatened species of fish, wildlife, and plants were established by the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) and regulations issued pursuant to the act. The purposes of the act are to provide mechanisms for the conservation of endangered and threatened species and the habitats upon*



*which they depend, and to achieve the goals of international treaties and conventions related to endangered species. Under the act, the Secretary of the Interior is required to determine which species are endangered or threatened and to issue regulations for the protection of those species. If any species is determined by the U.S. Fish and Wildlife Service (FWS) to be endangered or threatened, any action that would jeopardize its continued existence would be in violation of the act.*

*Section 7 of the Endangered Species Act (ESA) (Public Law 97-304) specifically requires all Federal agencies to use their authorities in furtherance of ESA to (a) carry out programs for the conservation of listed species and (b) to ensure that no agency action is likely to jeopardize the continued existence of a listed species or adversely modify critical habitat. This is a nondiscretionary requirement pertaining to the actions of all Federal agencies. BLM policy and guidance establish that species proposed for Federal listing be managed at the same level of protection as listed species except that formal consultation is not required. However, Section 7 conference with U.S. Fish and Wildlife Service is required for 'may affect' situations on proposed species (BLM Manual 6840). For Category 1 and 2 candidate species, the BLM shall carry out management consistent with the preservation of the species and their habitats and shall ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered (BLM Manual 6840).*

*The BLM will strive to maintain optimum habitats for endangered and threatened species on its lands. Approximately 5.5 million acres of BLM managed lands provide habitat for species that have been listed as endangered or threatened by the FWS. In addition, BLM will consider species that have been declining in abundance-but have not been listed as endangered or threatened (candidate species)when proposing land management practices. BLM anticipates the addition of 15 to 20 more special status species annually to the list of species that occur on BLM-administered lands because of a backlog at FWS.*

*BLM State Directors may designate sensitive species in cooperation with their respective State. These sensitive species must receive, at a minimum, the same level of protection as Federal candidate species (BLM Manual 6840). BLM shall carry out management for the conservation of State-list plants and animals. State laws protecting these species apply to all BLM programs and actions to the extent that they are consistent with FLPMA and other Federal laws. Where the State governments have designated species in categories that imply local rarity, endangerment, extirpation, or extinction, the State Directors will develop policies to help the State achieve their management objectives for those species (BLM Manual 6840).*

*Preserving existing habitats, restoring degraded habitats, and participating in recovery planning for these special status species are essential for protecting these populations. BLM is involved with both habitat management and wildlife management for special status species on its lands. Reintroduction programs on BLM-managed lands have been successful for many wildlife species, including the bighorn sheep, the pronghorn antelope, and the American peregrine falcon. Bighorn sheep now exist on a significant portion of their historic range as a result of these efforts (Fish and Wildlife 2000).*

*Because BLM is committed to mitigating adverse impacts on special status species, land management strategies will be studied on a site-specific basis to determine the effects, if any, on local habitats.*

*For example, many special status animal species are directly dependent on vegetation for habitat, and any change in the vegetation of a particular plant community is likely to affect the species associated with that community. Therefore, risks to special status animal species must be analyzed and documented before any site-specific action.*

*All BLM actions will be evaluated for potential impact to State and Federal species. If the evaluation indicates a "no affect" situation, the action may proceed. If the evaluation indicates a "may affect" situation (may affect includes both beneficial and adverse impacts) on a federally listed species and the adverse impacts cannot be eliminated, Section 7 consultation with the FWS must be conducted. BLM does not have the authority to make a "no affect" finding if a "may affect" situation exists. For federally proposed species, a Section 7 conference will be conducted. There are no legal requirements for Federal candidate species other than BLM policy for multiple-use management and to eliminate the need for listing. In general, BLM should be managing all of its programs for the conservation of endangered species to the extent that a jeopardy opinion need never be issued by the FWS or an individual State. After beginning Section 7 consultation with the FWS on a federally listed species, BLM will not, in accordance with Section 7 of ESA, make any irreversible or irretrievable commitment of resources that would preclude the formulation and execution of a reasonable alternative to solve the conflict.*

### *Wilderness*

*In wilderness areas, BLM's policy is to allow natural ecological processes to occur and be interfered with only in rare circumstances. BLM does not ordinarily treat vegetation in these areas unless, as in the case of noxious weeds, it is spreading within the wilderness area or to adjacent lands (USDI-BLM 1995b).*

*If vegetation control is found to be necessary in Wilderness Study Areas (WSA) and no effective alternative exists, BLM's policy is to limit its control program to small areas, limit the treatment method to manual or prescribed fire, and limit the area treated. Some actions can occur in WSAs that would not be allowed in wilderness areas, but BLM manages WSAs to avoid impairing their suitability for preservation as wilderness or affect their wilderness values (USDI-BLM 1983, 1988d).*

### **USDI-BLM 1985 FEIS - Northwest Area Noxious Weed Control Program**

#### ***Weed Management Treatments and Design Features***

*The purpose of this section is to discuss preventive measures, treatment methods, and protective measures (design features) that would be used in a noxious weed management program. Some acres may receive one or more treatments in combination, including such treatment*

*Combinations as herbicide application and burning, grazing and herbicide application, and grazing and use of insects or pathogens. Treatment would have to be repeated in most situations.*

*Pretreatment surveys would be conducted in accordance with BLM Manual 9222 before a decision is made to use herbicides on a specific tract. Such surveys would involve consideration of all feasible treatments, including potential impacts, effectiveness, and cost. Information from such surveys would be used as a basis for prescribing noxious weed treatments. Special provisions for treatments would be selected according to the scope of the action, accepted mitigation measures, and the physical characteristics of the specific site. BLM manuals, manual supplements, and field guides provide a variety of approved standard and special provisions. These provisions are updated periodically as pre- and posttreatment analysis finds a need for change.*

*Before any vegetation treatment or ground disturbance, BLM policy requires a survey of the project site for plants and animals listed or proposed for listing as threatened, endangered, and sensitive species. If a project might affect any listed or proposed federal threatened or endangered species or its critical habitat, BLM would make every effort to modify, relocate, or abandon the project to obtain a no effect determination. If BLM determines that a project cannot be altered or abandoned, it would initiate consultation with the U.S. Fish and Wildlife Service (50 CFR 402; Endangered Species Act of 1973, as amended).*

*When no effective alternatives to noxious weed control exist for wilderness study areas (WSAs), BLM's policy is to carry out a control program, but only in small areas. BLM is required to manage WSAs so as not to impair their suitability for preservation as wilderness. Therefore, some actions can occur in WSAs that would not be allowed in wilderness areas. These actions, however, could not impair wilderness values at the time the Secretary of the Interior submits his wilderness suitability recommendations to the President (BLM Interim Management Policy and Guidelines for Lands Under Wilderness Review, USDI-BLM 1995b). In wilderness areas, BLM's policy is to allow natural ecological processes to occur and to be interfered with only in rare circumstances. Noxious weeds would not ordinarily be controlled in wilderness areas unless these weeds threaten outside lands or are spreading within the wilderness. In those cases, noxious weeds may be grubbed or controlled with chemicals, provided the control can be effected without seriously impairing wilderness values (BLM Wilderness Management Policy--USDI-BLM 1995b).*

*BLM will assure that noxious weed infestations are noted and considered during appraisals of any land proposed for exchange.*

*Preventive management is important in preventing or retarding the spread of noxious weeds. The method of spread of noxious weeds that has the greatest impact on all landowners is the continued spread by vehicles, machinery or cargo along highways, railroads and rights-of-ways. Noxious weeds also spread downstream from points of sources of infestation by seed deposit into the water. Where livestock are being moved from a weed-infested pasture to a weedfree pasture, they should be confined to a small area for several days to prevent weed introduction into the weed-free pasture. Weeds can also be introduced by hay and other foodstuffs. Label restrictions dealing with buffer zones, feeding areas and holding pastures will be observed.*

## ***Chemical Methods***

*Stage of plant growth and season of application are especially important in prescribing chemical (herbicide) treatments. Plant susceptibility to herbicides varies seasonally and widely throughout the EIS area. Information on the most effective timing of applications appears in published research and on herbicide labels.*

*The herbicides 2,4-D, picloram, dicamba, and glyphosate are the only four proposed for use at this time. Other or new herbicides could be proposed for use in the future, but before their use, a hazard assessment will be conducted and appropriately documented.*

*Glyphosate is a nonselective herbicide that is not labeled for range use but is labeled for use along waterways and reservoirs and in recreation areas. Precautions would be taken to ensure that water will not be contaminated and that glyphosate would be used only for small infestations. Dicamba, 2,4-D, and picloram are selective herbicides that can injure or kill broadleaf herbaceous plants, depending upon the rate and method of application, without injuring grasses when label guidelines are adhered to.*

*Information on herbicides proposed for use can be found on herbicide labels, or in the following documents: Pesticides Background Statement (USDA-FS 1984), Environmental Fates and Impacts of Forest Use Pesticides (Ghassemi et al. 1981), Transmission Facilities Vegetation Management Program Final EIS (USDE-BPA 1983), Environmental Effects of Vegetation Management Practices on DNR Lands (Newton and Dost 1981) and Biological and Physical Effects of Forest Vegetation Management (Newton and Dost 1984). Herbicides would be applied and monitored in accordance with BLM Manual 9222, Chemical Pest Control.*

*Herbicides are applied in several ways, depending upon the treatment objective, topography of the treatment area, target species, expected costs, equipment limitations, and potential environmental impacts.*

*Herbicide applications would be timed to have the least impact on nontarget plants and animals consistent with the objective of the noxious weed control program.*

*Rates of herbicide application would depend on the target species, other vegetation present, soil type, depth of the ground water table, and presence of other water sources. Where weeds have infested riparian areas and woody draws, the rate of application would be reduced to reduce injury to nontarget species.*

*The size of areas that would be treated would vary from 10 feet in diameter to 100 acres, but, most such areas would vary from 10 feet in diameter to less than 5 acres. The normal area of treatment by helicopter would be less than 100 acres.*

*Helicopters would be used for all aerial applications, and nozzles to reduce drift would be used for all liquid applications. Liquid herbicides would not be applied when wind speeds exceed 5 miles per hour (mph), and granular herbicides would not be applied when wind speeds exceed*

*10 mph. Herbicides would not be applied when conditions stated on the herbicide label cannot be met and when air turbulence significantly affects the desired spray pattern. Buffer zones to protect water resources would be provided according to individual state regulations and guidelines and herbicide labels.*

*Vehicle-mounted sprayer (hand gun or boom) applications would be mainly used in open areas that are readily accessible by vehicle. The boom would be used only where feasible to treat concentrated weed infestations. The hand gun would be used for spot treatment of weeds and only up to the high-water line near water bodies. Neither hand guns nor booms would be used in riparian areas where weeds are closely intermingled with shrubs and trees. Under both hand gun and boom methods, sprays would be applied in a manner that gives the best possible coverage with the least amount of drift, and only when wind velocity is below 8 mph, except in riparian areas where treatment would be applied only at wind velocities below 5 mph. Boom sprayers would not be used within 25 feet of water bodies.*

*Hand applications could involve backpack spraying, wiper application, and cyclone broadcast spreading (granular formulations). Backpack sprayers are operated at low pressure and low volume and release herbicide through a single nozzle held from 0.5 to 2.5 feet above the ground when wind velocities do not exceed 8 mph. (Near water, wind velocities cannot exceed 5 mph.) Contact systemic herbicides, such as glyphosate, wiped on individual plants, would be used up to the existing high water line. Granular formulations would be applied through broadcast spreaders at about 3.5 feet above the ground and no closer than 10 feet from the high water line of streams and other water bodies.*

*In addition they will only be applied by an Oregon State certified and licensed applicator, only those formulations that have been approved by BLM, EPA and ODA, which have been proven not to contain inert ingredients on EPA list 1 or 2, other than petroleum distillates will be used, and all herbicide stipulations of the mitigation section following will apply.*

### **Manual Methods**

*Hand pulling and hand tools (shovel, hoe, pulaski,) would be employed. These methods are highly labor intensive, requiring periodic retreatment, ranging from every 3 weeks during the growing season to annually, depending on the target species. These methods have been successful in controlling annuals and biennials but are ineffective in controlling creeping perennials.*

### **Mechanical Methods**

*Burning, mowing, and tilling would be used.*

*Noxious weeds would be burned when weather or fuel conditions are favorable, usually between March and November and only at times approved by state organizations responsible for smoke management. Burning permits will be obtained where required.*

*All burning would be conducted in accordance with BLM's Fire Management Policy (USDI-BLM 1988a), which requires the preparation of a prescribed burning plan before every burn. The prescribed burning plan addresses the following: physical characteristics of the burn area, objectives of the burn, fuels on site (loading and characteristics), weather conditions under which the plan will be carried out, expected fire behavior, air and water quality restrictions, ignition pattern and sequence, emergency fire control force requirements, public contacts, and safety.*

*Three methods are normally used in igniting prescribed burns. One method is the use of truck mounted propane flamethrowers. Drip torches are used to apply a burning mixture of diesel fuel and gasoline by hand. Hand-held fusees are similar to flares and are touched directly to the vegetation to ignite it. When using either hand-carried drip torches or fusees, individuals cross the burn area in a specified pattern described in the prescribed burning plan. Tailoring traverse patterns to each burn area can maintain effectiveness, maximum safety, and control.*

*Mowing and tilling (discing) prevent plants from producing seeds when treated in the bud stage or earlier. Efforts repeated every 21 days during the growing season can deplete the underground food supply of some perennials. This method would be required for at least a 3-year period to attain satisfactory control and would be considered only in areas where slope is less than 10 percent and a small percentage of the vegetation consists of shrubs. This method would also weaken nontarget species in treated areas.*

### ***Biological Methods***

*Insects, pathogens, and grazing by sheep or goats would be used as biological weed control methods, although these methods can control few weed species. Biological control using sheep or goats would be applied to small areas for short periods. Areas where insects and pathogens naturally occur or are introduced should be protected from other control methods to maintain the density of host plants upon which the relationship between host plant and the controlling organism depends.*

*Extremely small supplies of biological agents exist for release on noxious weeds with the EIS area, and these insects and pathogens might not be able to survive in all parts of the EIS area because of severe climates. The following numbers of insects species are being tested in the EIS area: six species for leafy spurge, three for spotted and diffuse knapweed, three for musk thistle, three for tansy ragwort, two for Canada thistle, two for St. John's wort, and one for dalmatian toadflax. Many of the insects have not been established, and no pathogens are available for biological control in the EIS area.*

*In most circumstances the biological control agents used may be putting stresses on noxious weeds, but are generally not performing control.*

In addition to the above guidance special rules and regulations apply to Special Management Areas including Wilderness Study Areas, Wilderness Areas, Resource Natural Areas, Areas of Critical Environmental Concern, and Wild and Scenic River Areas. Within the plan boundaries types of these areas are located in Segments 1, 2, 3 & 10. Concerning these more sensitive areas staff

specialists and field managers will determine the best combination of IWM weed control practices to use. These practices would be determined based on the expected success of weed control efforts and the short and long term consequences.

In WSA's noxious weeds will be controlled and eradicated in accordance with the provisions of Chapter III.C.2 and Chapter III.H.4.e of BLM Manual H-8550-1, Interim Management Policy for Lands Under Wilderness Review (USDI-BLM 1995b). Those guidelines are excerpted as follows:

### *III.C. WATERSHED REHABILITATION AND VEGETATIVE MANIPULATION*

- 1. Watershed Rehabilitation. Measures required for watershed rehabilitation, including structures, will be permitted only if they satisfy the non-impairment criteria. Land treatments (e.g. trenching, ripping, pitting, terracing, plowing) will not be permitted on lands under wilderness review.*

*Watershed rehabilitation work required by emergency conditions caused by fire, flood, storms, biological phenomena, or landslide may involve any treatments needed but must be conducted to the extent feasible in a manner that will not impair wilderness suitability. For example, the rehabilitation work will use the methods least damaging to the wilderness resource. Alternatives to seeding must be carefully evaluated prior to the decision to reclaim, if reclamation is allowed. Reseeding and planting under emergency conditions will utilize species native to the area and will minimize cross-country use of motorized equipment. Seedings and plantings will be staggered or irregular so as to avoid a straight-line plantation appearance.*

- 2. Vegetative Manipulation. Vegetative manipulation by chemical, mechanical or biological means will not be permitted except: (1) plantings or seedings established before October 2, 1976 may be maintained but not expanded; (2) activities that qualify under the manner and degree provision for grandfathered grazing uses; and, (3) control of noxious weeds and individual exotic plants such as tamarisk when there is no effective alternative and when control of the noxious weed or exotic plant is necessary to maintain the natural ecological balances within a WSA or portion of a WSA. Hand or aerial seeding of native species may be done to restore natural vegetation.*

*In all cases where vegetative manipulation is proposed, the activity must conform to the policy guidance of Chapter II of this manual and not adversely impact wilderness values within any portion of the WSA.*

*In grandfathered" grazing operations, if vegetative manipulation had been done on the allotment before October 21, 1976, and its impacts were noticeable to the average visitor on that date, the improvement may be maintained by reapplying the same treatment to the same area. Otherwise, vegetative manipulation may be used only for control of small areas of exotic plants when there is no effective alternative. Limited exceptions are specified as follows.*

*Noxious weeds may be controlled by grubbing or with chemicals when they threaten lands outside the WSA, or are spreading within the WSA, provided the control can be effected without serious adverse impacts on wilderness values.*

*Prescribed burning may also be used where necessary to maintain fire-dependent natural ecosystems.*

*Reseeding may also be done by hand or aerial methods to restore natural vegetation.*

### *III. H.4.e.*

*Vegetative Manipulation. This includes chemical, mechanical, and biological methods to control noxious weeds or poisonous plants. In "grandfathered" grazing operations, if vegetative manipulation had been done on the allotment before October 21, 1976, and its impacts were noticeable to the average visitor on that date, the improvement may be maintained by applying the same treatment again on the land previously treated.*

*Otherwise, vegetative manipulation may be used only for control of small areas of poisonous plants or in emergencies for control of insects and disease when there is no effective alternative. Limited exceptions are specified as follows.*

*-- Noxious farm weeds may be controlled by grubbing or with chemicals when they threaten lands outside the WSA, or are spreading within the WSA, provided the control can be effected without serious adverse impacts on wilderness values.*

*-- Prescribed burning may also be used where necessary to maintain fire-dependent natural ecosystems.*

*-- Reseeding may also be done by hand or aerial methods to restore natural vegetation.*

*In WAs, noxious weeds will be controlled or eradicated in accordance with provisions of .37.A.3.h.(1) through (4) of BLM Manual 8560, Management of Designated Wilderness Areas, as follows:*

*(1) Seeding. The need of seeding must be carefully analyzed. Seeding will be approved only for:*

*(a) Areas where human activities have caused the loss or threatened the existence on indigenous species.*

*(b) Areas where human activities have denuded or cause loss of soil, providing the actions or activities responsible for the deterioration have been corrected and natural vegetation is insufficient and ineffective.*

*(2) Plant Control. Plant control must be approved only for:*

*(b) Noxious farm weeds by grubbing or with chemicals when they threaten lands outside wilderness or are spreading within the wilderness, provided the control can be effected without serious adverse impacts on wilderness values.*



*(4) Fertilizing. Fertilization may be used only as an aid to revegetation of disturbed areas approved in item (1).*

In addition to all previously discussed application procedures the Prineville District follows specific mitigating guidelines when implementing the District's Integrated Weed Management program for all noxious weed control activities both on the Lower John Day River and all BLM lands outside the Lower John Day River.

The following describes those mitigating stipulations:

- 1. Cultural (prevention) activities such as inspection (weed surveys), regulation (ROWs), sanitation (wash and clean vehicles) and education will be encouraged and enforced for all high priority developed multi-use recreational areas, especially those along the Lower John Day River.*
- 2. Physical control practices (Mechanical) such as mowing, tilling, disking, seedbed preparation, and prescribed burning (if over 40 acres) treatments will require a separate EA. Small mechanical treatment areas of less than 5 acres may only require a CE.*
- 3. All manual control practices (hand pulling and hand tools) will be done before seed ripe or dispersal and the plant residue collected as needed for burning (piles) or bagged and removed from site(s). On small isolated sites such as undeveloped primitive camp sites along the JDR manual control may be given priority consideration and users are encouraged to manually pull, grub, or hoe out the few plants to small patches of noxious weeds. Educational brochures identifying weed species of concern will be made available at all developed boating access points.*
- 4. Biological control practices methods such as introduced insects, competitive seedings, pathogens or grazing (goats or sheep) will be given consideration District wide. ODA approved biocontrol agents (insects or pathogens) will be given emphasis for release to control/contain larger infestations where containment is major goal. The approval for release of beneficial insects or pathogens must use the same procedures as herbicides using the Biological Control Agent Release Proposal (BCARP) and Record (BCARR). Only ODA approved biological control agents will be allowed for release after District and State Office approval.*
- 5. A Special Status Plant and Animal survey or clearance will be done prior to any treatment.*
- 6. A cultural survey or clearance is required before any soil surface disturbing activity from physical weed control practices (mechanical or prescribed fire) occurs. Hand pulling, grubbing or hoeing a few plants or scattered plants on*

*public land sites less than 5 acres (such as undeveloped campgrounds along the Lower JDR in WSAs and/or WSRs is authorized)*

7. *All herbicide use will comply with USDI rules and policy, BLM policy and guidelines, Oregon State laws and regulations, OR Department of Agriculture (ODA) laws and regulations, Environmental Protection Agency (EPA) , federal pesticide laws (FIRCA), Oregon Department of Environmental Quality (DEQ) regulations, Local County Weed District Priorities and requirements and by Law must follow product label requirements.*
8. *All pesticide (herbicide) applicators are required to submit proposals using:  
1.) a Pesticide Use Proposal (PUP) form (which BLM may approve for use of up to 3 years, if same chemical, same target weed, and same area);  
2.) a Pesticide Application Record (PAR) to be completed after application and promptly submitted to the district office.*
9. *All herbicide applications will only be applied by a Oregon State licenced and certified applicator.*
10. *Material Safety Data Sheets (MSDSs for each herbicide being applied will be at site with applicator, and guidelines and information found in "Oregon Pesticide Applicator Manual" as updated will be followed*
11. *Areas of known or suspected Federal Listed, Candidate or Proposed or Oregon Candidate (old C-1) or Species of Concern (old C-2) amphibians will have as a minimum 100 foot buffer strip from live water for all herbicide applications, with the exception for the use of Rodeo.*
12. *Use of existing trails/access routes or roads for emergency weed control activities will be allowed by vehicles even in WSAs, but use of existing routes for prescribed fire, herbicide application, or seeding practices will only be by ATV type vehicles. All seeding in WSAs will be by broadcast methods.*
13. *Herbicide Use Restrictions are as follows:*
  - a. No vehicle mounted or powered boom sprayers or handguns will be used within 25 feet of surface (live) water.*
  - b. No booms or powered equipment applicators would be used in riparian areas, where weeds are closely intermingled with trees and shrubs.*
  - c. Liquid herbicides can be applied (at a height of 0.5 ft to 2.5 ft. above ground) to areas for spot treatments with hand spraying (backpack) equipment (single nozzle, low pressure and volume) to within 10 feet of live water. Use of mule or horse mounted equipment would also be allowed.*

- d. Spreader equipment (broadcast) could be used to apply granular formulations applied at a height of about 3.5 feet, to within 10 feet of the high water line of live water.*
- e. Contact Systemic Herbicides (such as Glyphosate - Rodeo or Accord) may be allowed using hand wipe applications on individual plants up to the existing high water line.*
- f. When wind speeds exceed 5 mph, no spray equipment will be used in riparian areas or near water, and no aerial applications are allowed in riparian or wetland areas. No aerial application of Glyphosate is allowed.*
- g. No application of herbicides will occur if wind speeds exceed 8 mph.*
- h. All aerial application of herbicides will be done only by helicopter and allowed within the constraints of the Final NW Area Noxious Weed Control Program EIS (1985) as supplemented 1987, and ROD pages 1-3 (May 5, 1987). A buffer strip of 100 feet will be established between target weed areas and any live water/riparian areas.*
- i. No aerial application of herbicides will be permitted without written approval from the authorized officer.*
- j. No aerial application of herbicides will be permitted when wind speeds exceed 5 mph.*
- k. For OR/WA only 2,4-D, picloram (Tordon), dicamba, and glyphosate (Rodeo and Accord only) and approved combinations will be allowed as per ROD (1987) from Supplemental FEIS (1987). Acceptable formulations, EPA registration numbers, maximum rates of application, and mixture stipulations are referenced from BLM Approved list March 1994 from Table 1-3 p. 9 FEIS (1985)*
- l. All chemicals will be applied only in accordance with BLM, EPA, ODA requirements, and Herbicide LABEL standards/stipulations.*
- m. Pesticide Use Proposals (3 year approval) for herbicide application within boundaries of WSAs, or WAs, and RNAS will be reviewed and evaluated by Resource Area staff on a year to year basis.*
- n. Monitoring pretreatment and posttreatment will be done yearly (pre and post spray applications) on all treated areas.*
- o. In aerial applications a 500 foot unsprayed buffer strip will be left next to inhabited dwellings unless waived in writing by the residents. A 100 foot buffer of unsprayed strip will be left next to croplands and barns.*

*p. Additional Herbicides if approved may be used subject to all the above mitigation measures, label restrictions and within limits of ROD or specific approval recommendations.*

*q. The maximum rates of application for the four approved herbicides (per Table 3-1 from FEIS 1985): (ai = active ingredients of specific herbicide).*

*Ground Applications (vehicle and hand)*

*Application of Single Herbicide:*

<i>Herbicide</i>	<i>Maximum Rate</i>
<i>2,4-D</i>	<i>3 lb ai/ac</i>
<i>Dicamba</i>	<i>6 lb ai/ac</i>
<i>Glyphosate</i>	<i>3 lb ai/ac</i>
<i>Picloram</i>	<i>1 lb ai/ac</i>

*Application of Tank Mixes:*

<i>Herbicide</i>	<i>Maximum Rate</i>
<i>2,4-D and Dicamba</i>	<i>2 lb ai/ac 2,4-D &amp; 1.5 lb ai/ac Dicamba</i>
<i>Picloram and 2,4-D</i>	<i>0.5 lb ai/ac Picloram 2,4-D</i>
<i>1 lb ai/ac 2,4-D</i>	

*Aerial Applications (helicopter only)*

<i>Herbicide</i>	<i>Maximum Rate</i>
<i>2,4-D</i>	<i>3 lb ai/ac</i>
<i>2,4-D and Dicamba</i>	<i>2.0 lb ai/ac 2,4-D and 1.5 lb ai/ac Dicamba</i>
<i>Picloram</i>	<i>1.0 lb ai/ac</i>

- 14. All other stipulations and mitigation in FEIS (1985) pp. 1-7 to 1-10, Supplemental FEIS (1987) pp. 119-122, RODs (1986) or (1987) will apply. In addition, the stipulations and mitigation from the FEIS 1991 and its ROD will apply for all additional chemicals (herbicides) if or when approved for noxious weed control.*

At this time the Prineville District has working relationships (current/past contracts or agreements) with the State ODA (State BLM/ODA cooperative agreement), and Crook/Wheeler, Deschutes, Gilliam, Grant, Jefferson, Morrow, Sherman and Wasco counties for noxious weed control work being done on public lands.

Additional cooperation is being addressed through information and or control work with local irrigation districts, Oregon Dept. of Transportation (ODOT), Bonneville Power Administration (BPA), Pacific Gas Transmission (PGT), adjacent/local U.S. Forest Service offices and other local agencies. These control actions for the most part deal with noxious weed control along various

rights-of-way (ROW). Information is being exchanged also with the other counties within the District to include Hood River, Klamath, and Lake counties. A working relationship for control actions within these counties will be initiated as noxious weed conditions/needs warrant.

Besides field treatment (Control), the counties are also involved in 1) Inventory of noxious weeds, especially where public lands interface with other ownerships; 2) Monitoring and Evaluating the effectiveness of eradication and/or control actions; 3) Future planning needs such as preparing site treatment proposals (PUPS or BCARPs) combined with other IWM control practices for outlying years; and 4) Updating current and existing noxious weed control contracts with BPA, PGT, ODOT or County Road Depts. and/or other agencies with appropriate Pesticide Use Proposals (PUPS), Pesticide Application Records (PARs) or Biological Control Agent Release Proposals/Records (BCARP/Rs) when public lands administrated by BLM are involved even if in an existing approved ROW corridor.

The specific noxious weeds that are targeted for treatment by BLM, the Ochoco National Forest and associated counties is listed in Table 25.

Table 27. Noxious Weeds Targeted for Treatment in Planning Area.

<b>Common Name</b>	<b>Scientific Name</b>
Absinth Wornwood	<i>(Artemisia trifida)</i>
African Rue	<i>(Peganum harmala)</i>
Bassia Five-hook	<i>(Bassia hyssopifolia)</i>
Bearded (Common) Crupina	<i>(Crupina vulgaris)</i>
Blue Flower Lettuce	<i>(Lactuca pulchella)</i>
Brown Knapweed	<i>(Centaurea jacea)</i>
Buffalabur	<i>(Solanum rostratum)</i>
Bull Thistle	<i>(Cirsium vulgars)</i>
Camelthorn	<i>(Alhagi pseudalhagi)</i>
Canada Thistle	<i>(Cirsium arvense)</i>
Common Burdock	<i>(Arctium minus)</i>
Cocklebur (Broad-leaved)	<i>(Xanthium strumarium)</i>
Common Groundsel	<i>(Senecio vulgaris)</i>
Common Mullein	<i>(Verbascum thapsus)</i>
Common Ragweed	<i>(Ambrosia artemisiifolia)</i>
Creeping Buttercup	<i>(Ranunculus repens)</i>
Curly Dock	<i>(Rumex crispus)</i>
Dalmation Toadflax	<i>(Linaria dalmatica)</i>
Diffuse Knapweed	<i>(Centaurea diffuse)</i>
Dodder	<i>(Cuscuta spp)</i>
Dyers Woad	<i>(Isatis tinctoria)</i>
Eurasian Water-milfoil	<i>(Myriophyllum spicatum)</i>
False Hellebore Calif	<i>(Veratrum californicum)</i>
Field Bindweed-Perennial Morning Glory	<i>(Convolvulus arvensis)</i>
Giant Ragweed	<i>(Ambrosia trifida)</i>
Gorse	<i>(Ulex europaeus)</i>

Halogeton	<i>(Halogeton glomeratus)</i>
Hawkweed	<i>(Picris hieracoides)</i>
Hemp Dogbane (common)	<i>(Apocynum cannabinum)</i>
Henbit	<i>(Lamium amplexicaule)</i>
Horsetail Rush (Giant)	<i>(Equisetum telmateia)</i>
Horseweed	<i>(Conyza canadensis)</i>
Iberian Starthistle	<i>(Centaurea iberica)</i>
Italian Thistle	<i>(Carduus pycnocephalus)</i>
Japanese Knotweed	<i>(Polygonum cuspidatum)</i>
Jimson Weed	<i>(Datura stramonium)</i>
Johnsongrass	<i>(Sorghum halepense)</i>
Jointed Goatgrass	<i>(Aegilops cylindrica)</i>
Kochia	<i>(Kochia scoparia)</i>
Leafy Spurge	<i>(Euphorbia esula)</i>
Littlebur (Bur Buttercup)	<i>(Ranunculus testiculatus)</i>
Matgrass	<i>(Nardus stricta)</i>
Meadow Knapweed	<i>(Centaurea pratensis)</i>
Mediterranean Sage	<i>(Salvia aegyptiaca)</i>
Medusahead Rye	<i>(Taeniatherum caput-medusae)</i>
Milk Thistle	<i>(Silybum marianum)</i>
Musk Thistle	<i>(Carduus nutans)</i>
Perennial (Canada) Goldenrod	<i>(Solidago canadensis)</i>
Perennial Pepperweed	<i>(Lepidium latifolium)</i>
Perennial Sowthistle	<i>(Sonchus arvensis)</i>
Poison Hemlock	<i>(Conium maculatum)</i>
Puncture Vine	<i>(Tribulus terrestris)</i>
Purple Loosestrife	<i>(Lythrum salicaria)</i>
Purple Mustard (Blue)	<i>(Chorispora tenella)</i>
Purple Starthistle	<i>(Centaurea calcitrapa)</i>
Quack grass	<i>(Agropyron repens)</i>
Russian Knapweed	<i>(Centaurea repens)</i>
Russian Thistle	<i>(Salsola kali)</i>
Rush Skeleton Weed	<i>(Chondrilla juncea)</i>
Sandbur	<i>(Cenchrus spp)</i>
Scotch Broom	<i>(Cytisus scoparius)</i>
Scotch Thistle	<i>(Onopordum acanthium)</i>
Short-fringed Knapweed	<i>(Centaurea nigrescens)</i>
Showy Milkweed	<i>(Asclepias speciosa)</i>
Skeletonweed	<i>(Lygodesmia juncea)</i>
Spikeweed (Calif)	<i>(Hemizonia pungens)</i>
Spiny Cocklebur	<i>(Xanthium spinosum)</i>
Spiny Sowthistle	<i>(Sonchus asper)</i>
Spotted Knapweed	<i>(Centaurea maculosa)</i>
Squarrose Knapweed	<i>(Centaurea virgata var. squarrosa)</i>
St. Johnswort- Klamath Weed	<i>(Hypericum perforatum)</i>

Tansy Ragwort	<i>(Senecio jacobaea)</i>
Teasel	<i>(Dipsacus sylvestris)</i>
Wavyleaf Thistle	<i>(Cirsium undulatum)</i>
Western Ragweed	<i>(Ambrosia psilostachya)</i>
Western Salsify	<i>(Tragopogon dubius)</i>
Western Water Hemlock	<i>(Cicuta douglasii)</i>
WhiteTop/Hoary Cress	<i>(Cardaria draba)</i>
Wild Carrot	<i>(Daucus carota)</i>
Wild Oats	<i>(Avena fatua)</i>
Wild Proso Millet	<i>(Panicum miliaceum)</i>
Woolly Distaff Thistle	<i>(Carthamus lanatus)</i>
Wooly Pod Milkweed	<i>(Asclepias sp.)</i>
Yellow-Common Toadflax	<i>(Linaria vulgaris)</i>

## **B. Noxious Weeds Monitoring**

A monitoring plan following guidelines of Table 26 will be established to determine success/ failures and any other impacts. Modifications to the proposed action in site specific areas would be proposed if necessary and further environmental assessment/public disclosure made. BLM will monitor all noxious weed control projects with special emphasis on chemical and biological control efforts. In order to facilitate such monitoring, the District's Resource Areas will require utilization of the following forms for 9011): Pesticide Use Proposal (PUP) (PAR), Biological Control Agent Release Proposal (BCARP); Biological Control Agent Release Record (BCARR); the District Monitoring and Evaluation form/guidelines; A District Noxious Weed Field Survey Form (Apr 1993); and map (USGS 7.5 min topographic preferred-copy to an 8 ½ by 11 inch sheet) showing location of project.

Table 28 District Herbicide Application Monitoring Plan

Monitoring Element	Methods	Time	Characteristics Evaluated
Pretreatment Survey	Onsite Visual Inspection	Each Treatment Area	Species present, density, endangered species present, control options, methods chosen, District Noxious Weed Field Survey Form Completed
Posttreatment Survey	Onsite Visual Inspection	Each Treatment Area	Effectiveness, need for retreatment, corrective measures or mitigation
Pesticide Use Proposal	Review of Proposal and herbicide by authorized State certified applicator	Before any herbicide application	Proposal compared to EPA registration requirements and meets EIS and EA stipulations
Water Monitoring	Pre- and Post- treatment water samples, if near potable water sources and herbicide could get into water	As needed	Potential water contamination
Coordination Monitoring	Weed Management Plans submitted to Washington Office	Yearly	Coordination of plan
Biological	Survey of Biological control agents release sites	Yearly	State/District establishment, rate of spread effectiveness, of released biological control agents
Surveys for Special Status Species	Survey for species before action	Each project	Presence of Special Status Species
Cultural Resource Surveys	Survey for Cultural Resources	Each project involving fire or surface soil disturbances	Presence of Cultural Resources
Contract	Administration of Contract	Each contract	Contract stipulations and work accomplished

### C. Actions for Coverage

**NMFS & USFWS:** Noxious weed treatment includes several types of practices as outlined above in order to control and eradicate noxious weeds: Cultural, Physical, Chemical and Biological. The nature and extent of this action fall far beyond the boundaries of the John Day River Proposed Management Plan. Consultation for this action therefore relies on a far broader geographic coverage which will not be attempted in this document. For that reason and the



initiation of other consultation regarding noxious weed management practices the Prineville BLM is not seeking coverage for any noxious weed management actions at this time.

#### **D. Summary of Effects and Effects Analysis**

##### Noxious Weed Management

	Direct Impacts	Indirect Impacts
Affects on Steelhead	ND	ND
Affects on Critical Habitat	ND	ND
Affects on Bull Trout	ND	ND

The noxious weed management program uses Cultural, Physical, Biological and Chemical treatments to halt the spread and eradicate noxious weeds from the landscape. With the stated mitigation stipulations, any weed treatments applied, with adherence to the project design criteria as outlined in the broad scale EIS's and the mitigation stipulations as directed by Prineville BLM will minimize and eliminate any adverse affects to listed fish or their habitat. With regard to chemical treatments there is a slight possibility that chemicals could be introduced to waterways and therefore pose a threat to listed species present at that time. Due to the level of analysis required to assess effects from chemical and biological control applications on listed fish and the geographic scope of noxious weed management, consultation for this program will be pursued for the entire Prineville District by the Oregon State of of BLM in a subsequent consultation process, therefore no determination of effects will be made at this point.

## **V. Fire Management**

### **A. Proposed Actions and Program Description**

Fire management involves three types of actions - suppression, prescription and rehabilitation.

Suppression activities are initiated during wildfire occurrences and are addressed in the Prineville Fire Management Plan (USDI BLM 19998a) and will not be addressed in this document. Prescription activities are pre-planned and scheduled activities involving vegetation treatment and manipulation. Rehabilitation activities occur after wildfire suppression operations to reclaim areas disturbed by suppression efforts, some actions such as seeding are also used after prescribed fire treatments or noxious weed management treatments.

#### **1. Prescribed Fire Management**

Prescribed fire as a tool for resource management is used on the Prineville District. A separate environmental analysis for these actions - the John Day Basin Prescribed Fire Project has been completed. The proposed action would result in prescribe burning multiple units (to be identified, and surveyed before treatment) within the John Day Basin. Fire would be reintroduced for several reasons which include juniper reduction, aspen regeneration, weed reduction, riparian enhancement and to improve forb grass and litter cover.

Each year approximately 5,000-10,000 acres would be burned in the John Day Basin. Each unit, once identified, would be subject to clearances for special status species, cultural/historical and archaeological/paleontological values and mitigative efforts described. Each year interested parties/ agencies would be notified of proposed burns and given a chance to comment. Once each unit was approved, the area would be prescribe burned in a mosaic pattern designed to burn approximately 30-50 percent of the total acres specified for each unit. Burning in a mosaic pattern creates an induced edge in the rangeland ecosystem. An edge is a place where plant communities meet or where structural conditions within plant communities come together. The edge area, and the area influenced by the transition between communities are usually richer in wildlife than the adjoining plant communities (Thomas et al. 1986). Over the last 80 years, as understanding of the concept of edge-effects has grown, the BLM has developed management guidelines for preserving and improving wildlife diversity. The United States Department of the Interior, Bureau of Land Management Manual 1603 - under "Major Principles and Standards" (p. 12D, 1973) states that "the essential requirements of wildlife - food, cover, and water - will be maintained so as to provide optimum 'edge effect' and interspersed of habitat components in important wildlife areas."

A burn plan would be developed for each unit which would take into account special status species and resource values. The burn plan would address any necessary species specific mitigations needed to reduce negative impacts of burning. Examples include season of burn, time of day, firing tools, and weed management. Treatments would primarily occur on sagebrush-juniper plant associations with up to 50 percent of total acres burned, but may include other vegetation associations such as ponderosa pine, aspen and riparian communities. Following treatment units will be monitored to determine the project's effectiveness, fire effects, and recovery rates using photo-point references, plots, and individual observations.

Firing methods will be specific to each proposed unit and could include combinations of hand-held drip torches, helitorches, ping-pong balls, and fuzes. Fire control vehicles would be cleaned of material before entering the project area in order to reduce the risk of introducing noxious weed species. Existing roads and natural fuel breaks would be used as unit boundaries, with roads being bladed (cleared of vegetation), if necessary, to serve as firelines. In the event that a unit is selected without existing firelines present, fireline would be constructed from a combination of roads, handline, and blackline in the most cost-effective and least resource damaging manner. No roads/handlines would be constructed if negative impacts would occur to any special status species or special resource values. All roads/line constructed would be rehabilitated using native seed mixes following the completion of the treatment. No roads would be constructed in the WSAs.

No changes in grazing management would occur. The permittees' grazing permits stipulate that livestock would be excluded from grazing the burned areas for at least two growing seasons following treatment, unless dormant season use is required to meet the objectives. In some instances long-term, post-burn grazing management may be required to ensure complete recovery of the burned units (especially regarding tree and shrub germination). Therefore, as determined on the unit by unit basis, livestock may be prohibited from grazing burned units for more than two years. All units would be monitored to assess the prescribed burn's effectiveness in meeting the goals and objectives. Project objectives may also be achieved using the Omnibus Consolidated Appropriation Act of 1997, which allows the BLM to enter into cooperative burning agreements with private landowners, provided the burn will benefit adjacent BLM-owned land. Within the entire John Day Basin there are approximately 439,617 acres of BLM land, 25,839 acres of state owned land, 61,004 acres of Forest Service land, 4,382 acres of National Park owned land, and 2,705,317 acres of private and other land.

Prescribed fire may result in prescribed burning within the six John Day Basin Wilderness Study Areas (WSAs); Aldrich Mountain, Thirtymile/Lower John Day, North Pole Ridge, Spring Basin, Sutton Mountain and Pat's Cabin. (portions of five of these WSA's are included within the plan boundaries: Aldrich Mtn., Thirtymile, Lower John Day, North Pole Ridge and Spring Basin). Fire was historically an essential component of these ecosystems. Reintroducing fire is expected to restore a natural process to the WSAs which reduced juniper densities, regenerated hardwoods, and enhanced habitats by improving native forb and grass cover. If prescribed fire is to be used in conjunction with other weed control methods, such as herbicide use, a separate EA will be done in accordance with the District Integrated Weed Management EA decision record. All entrances into the WSAs for the purpose of burning would be done in accordance with the guidelines established in the Interim Management Policy (IMP) and Guidelines for Lands Under Wilderness Review (1995). Existing roads, wetlines and natural fuels breaks would be used as much as possible to access and contain burns. To maintain compliance with the IMP for WSAs (page 9, USDI-BLM 1995b), any surface disturbing activities such as fireline construction will not be allowed during the course of normal prescribed burning activities within the WSA boundaries. Furthermore, in the event that fire suppression activities are required, "light hand on the land" fire suppression tactics will be used to avoid unnecessary impairment of wilderness values. Fire control vehicles would be cleared of vegetative material before entering the WSAs in order to reduce the risk of introducing noxious weeds. Firing methods would also be specific

to unit requirements and would be used to prescribe burn in a mosaic pattern in order to best mimic the natural processes.

Each prescribed burn project will follow the following mitigation or enhancement measures to further protect sensitive species and areas:

Although additional mitigative measures may be added to the prescribed burn plan completed for each unit, several mitigative or enhancing measures should be common to all or most of the units.

1. Burn patterns will be designed to provide the maximum benefit to the highest number of species in and adjacent to the unit (i.e. mosaic pattern retaining adequate thermal/hiding cover, forage, seed sources etc.).
2. Season of burning will be determined according to the dominant vegetation in the unit. Exceptions may include bitterbrush or fescue sites which will require leaving at least 50 percent of the plants to provide seed stock for regeneration.
3. Ancient or "old growth" juniper trees will be avoided and protected wherever possible, these trees generally occur on rocky ridges and rock outcrops where fire historically would not burn.
4. Burning (timing/pattern/location) will also be designed to avoid long-term negative impacts to special status species. No arrowleaf thelypody will be burned unless the burn will be low intensity and all heavy fuels are removed from known populations.
5. All vehicle use in WSAs will conform to IMP for Wilderness Areas requirements.
6. All areas where fireline is to be constructed will be surveyed for cultural/paleontological/archaeological/historical resources. Any site with anticipated/known special resources will be surveyed. Fire temperatures should be maintained below critical thresholds.
7. Existing roads or natural fuel breaks will be used whenever possible and at all times within WSAs.
8. All prescribed burn activities should conform to "light-hand-on-the-land" techniques whenever possible, and at all times in WSAs.
9. Should smoke drift toward major communities (e.g. John Day, Condon) prescribed burning activities will be halted until such time that conditions become more favorable.
10. Fire vehicles/equipment will be cleared of vegetation prior to entering burn units to avoid spreading noxious weeds.

## 2. Fire Rehabilitation

Fire rehabilitation will occur primarily on wildfire areas but could also occur on prescribed fire areas and noxious weed treatment areas. Fire rehabilitation is addressed under an Emergency Fire Rehabilitation Plan (EFRP) which includes actions involving revegetation, replacement or repair of structures, erosion control treatments and site preparation. Specific criteria for emergency fire rehabilitation have been developed. These guidelines and criteria are also used when rehabilitation occurs on prescribed fire areas and noxious weed treatment areas. The following Standards for Use of Emergency Fire Rehabilitation Funds is excerpted from BLM Handbook 1742 Emergency Fire Rehabilitation (EFR).

*BLM fire rehabilitation actions are intended to stabilize biotic communities to minimize unacceptable change to ecosystem structure and function of the public lands. EFR funds can only be used for rehabilitation of public lands administered by the BLM. Coordination of EFR efforts is encouraged with the USDA Natural Resources Conservation Service (NRCS), USDA Forest Service, and appropriate State agencies, etc., to improve economic efficiencies in their related rehabilitation programs. The use of EFR funds for fire rehabilitation is subject to a number of criteria.*

### *A. Timeliness*

*Congress has determined that it is in the best interest of the Nation to take swift action to rehabilitate burned lands. Therefore, EFR treatments must be implemented, to the extent possible, before additional damage occurs to the burned site or undesirable vegetation becomes established. Treatment must occur at a time that will ensure a high or maximum probability of success. Therefore, EFRPs and NFRP supplements should be submitted to the next level of management review or approval within 21 calendar days of wildland fire control. Extensions to the 21-day submission requirement must be approved at either the State or Washington Office level. State Office review or approval and Washington Office budget approval for plans more than \$100,000 must be completed within 7 calendar days of receiving the EFRP or NFRP supplement. The plan preparation time frame is shorter on multi agency rehabilitation projects. Plans must be submitted to the authorizing officer within 10 days following control of fire; if additional time is needed, extensions can be negotiated with the State Office and cooperating agencies.*

### *B. Equipment*

*Capitalized or noncapitalized equipment will not be purchased with EFR funds without review by the Washington Office, Division of Budget (WO-880), and written approval of the Director. Purchasing equipment must be shown to be more economical than leasing it before it will be considered for approval by WO-880.*

### *C. Livestock Management*

*Exclusion of livestock is critical for the recovery of burned vegetation or establishment*

*and maintenance of new seedings and livestock use should not be permitted until the vegetation has recovered or has established.*

#### *1. Recovery/Establishment Period*

*Revegetated areas and areas that have been burned but not revegetated will be closed to livestock grazing for at least two growing seasons following the season in which the wildfire occurred to promote recovery of burned perennial plants and/or facilitate the establishment of seeded species. Livestock permittees must be informed of the closure early during the plan preparation process, and livestock closures will be made a condition or term on the grazing license or permit. Livestock closures for less than two growing seasons may be justified, on a case-by-case basis, based on sound resource data and experience.*

#### *2. Grazing Management After Recovery/Establishment Period*

*An interdisciplinary evaluation is required at the end of the second growing season to determine whether additional livestock exclusion is required to meet rehabilitation objectives. Additional grazing exclusion may be required to achieve rehabilitation objectives, especially when palatable, slow-maturing shrubs are included in the rehabilitation project. Most shrubs should not be grazed until they are able to produce viable seed. Postestablishment live-stock management in burned or seeded areas should maintain both the planted species and the native species to meet land use (including Standards for Rangeland Health and Guidelines for Grazing Management) or activity plan objectives.*

### *D. Wild Horses and Burros*

*Wild horses and burros may also need to be excluded from treatment areas. EFR funds may be used for fencing or temporary relocation (both actions must be consistent with the wild horse and burro policy) until the area recovers. Additional use supervision may be required to ensure that wild horses or burros are not accidentally trapped within the treatment areas if they inadvertently gain access. It is also important to ensure that wild horses or burros do not get trapped without access to water or do damage to seeded or recovering burned areas. Care should be taken to minimize the blocking of migration or water trails with EFR protective fences.*

### *E. Wildlife*

*Wildlife populations, especially big game species, may depend on habitat lost in wildland fires for survival, and wildlife use may have a significant effect on the success of rehabilitation treatments.*

#### *1. Habitat Loss and Replacement*

*EFR treatments must be consistent with wildlife habitat management objectives in land use and activity plans. For example, if a land use plan identified an area as critical deer winter range and it burned, the EFR plan may make a recommendation to plant appropriate shrub species to meet wintering deer habitat and watershed stabilization needs. As in other vegetation projects, planning and implementation should be within two growing seasons. As with all seeding prescriptions, a combination of criteria including cost, adaptability, probability of successful establishment, weed competition, etc., should be considered before finalizing a seed prescription in important wildlife habitats.*

## *2. Wildlife Management During Recovery/Establishment Period*

*Wildlife may cause damage to burned areas during the recovery and/or seeding establishment period. Most wildlife management programs are the responsibility of State wildlife agencies; therefore, BLM can only indirectly manage these impacts. If wildlife threaten the success of rehabilitation treatments, an agreement should be reached with State wildlife management agencies before the rehabilitation treatments are implemented, prescribing how wildlife will be managed.*

### *F. Threatened, Endangered, and Sensitive Species*

*The policy of the BLM is to conserve threatened and endangered (T&E) plant and animal species through conservation of the habitats upon which they depend, and to work closely with the U.S. Fish and Wildlife Service on species protection. All fire rehabilitation plans should be reviewed to determine if T&E species or their habitats would be adversely affected by the implementation of rehabilitation treatments. The BLM will consult with the U.S. Fish and Wildlife Service (or National Marine Fisheries Service, as appropriate) on all actions that may affect a listed species or its habitat to ensure compliance with Section 7 of the Endangered Species Act. A similar process is required for State agencies when State-listed species are involved. The BLM policy on Federally listed species, species proposed for listing, candidate species, sensitive species, and State-listed species is contained in Manual Section 6840, it identifies management requirements for proposed species should be reviewed for additional management requirements. Time frames for review and consultation may last several months. Therefore, every effort should be made to initiate these actions early in the EFR planning process.*

### *G. Forest Rehabilitation*

*Reforestation of burned commercial forest land is not an appropriate use of EFR funds. However, the costs for removing trees destroyed by fire where they are a danger to the public is appropriate, as is the use of trees in contour felling to reduce the possibility or amount of erosion. Trees may be planted in certain and limited situations (see III.Q.1).*

### *H. Wilderness Study Areas/Wilderness*

## *1. Wilderness Study Areas*

*Handbook H-8550-1 includes BLM policy and guidance for management of Wilderness Study Areas (WSAs) and should be consulted. In general, WSAs must be managed in a manner so as not to impair their suitability for preservation as wilderness. Impacts from the equipment used for seeding must be carefully planned to be the least intrusive necessary to obtain a successful seeding. The use of native species (does not include naturalized species such as crested wheatgrass) is required in WSAs. Current Instruction Memorandums, WSA Handbook H-8550-1, and the Bureau's local, state, or national wilderness specialists should be consulted prior to implementing EFR treatments in a WSA. Exceptions to the use of nonmotorized equipment in a WSA must be fully justifiable based upon an imminent and severe threat to high downstream values. Coordination with interested public and wilderness organizations is encouraged early in the EFR planning process.*

## *2. Designated Wilderness Areas*

*Manual Section 8560 and Handbook H-8560-1 (Management of Designated Wilderness Areas) provide guidance on surface-disturbing activities in Wilderness Areas. Wilderness Management Plans are required for all designated Wilderness Areas and should be reviewed during EFR plan development. EFR treatments in designated Wilderness Areas may use native or naturalized nonnative species such as crested wheatgrass where there is no reasonable expectation of natural regeneration. Seeding equipment used in these areas must be the minimum necessary to successfully distribute the seed into a suitable seedbed. Overland motorized equipment will not be used where nonmotorized equipment can accomplish the rehabilitation objective(s). Activity plans, such as NFRPs, and EFRPs must conform with Wilderness Management Plans.*

## *I. Recreation*

*Burned or seeded areas may be temporarily closed to the public (43 CFR 1840.11) by excluding vehicle, bicycle, horse, and foot use if unacceptable resource damage would occur or if danger to the public is present due to fire damage or rehabilitation activities. Such closures require following the NEPA process and issuing a Federal Register Notice and sufficient public notices. Costs to enforce public restrictions or closures should be reasonable and accomplished within existing program funding (e.g., benefitting activities), except in extraordinary situations, which require justification and approval in the EFR plan. Land use or activity plans should be reviewed prior to implementing rehabilitation measures to identify other areas of special management concern (Areas of Critical Environmental Concern, outstanding natural areas, primitive areas, Wild and Scenic Rivers, National Trails, Research Natural Areas, National Conservation Areas, National Monuments) to ensure rehabilitation treatments are consistent with management objectives for these areas.*

## *J. Visual Resources*



*Impacts of rehabilitation practices on visual resources (see Visual Resource Inventory Manual Handbook H-8410-1) should be considered in all EFR plans. A Visual Contrast Rating Worksheet (Form 8400-4) or a checklist is required for all rehabilitation projects (see Manual Handbook H-8431-1, Visual Resource Contrast Rating).*

#### *K. Cultural Resources*

*Rehabilitation treatments that disturb the soil surface must be reviewed for potential effects on significant cultural resources. The appropriate Field Office cultural specialist should become involved in treatment planning as early as possible to determine if survey, protection measures, and consultation with Native American tribes and other parties are required prior to treatment. This early coordination is especially important where delays in obtaining cultural clearances could delay or halt timely reseeding or project implementation. Where significant cultural resources are physically avoided by rehabilitation treatments, the avoided areas should be manually or mechanically reseeded with equipment that causes minimum surface disturbance (for example, broadcast seeded and seed covered by pickups or four-wheelers with drag chains). Close coordination with the District or State Office staff personnel may help in this process. Cultural clearances should be addressed early in the EFR plan development to ensure that treatments are installed at the proper time. Cultural clearances are covered by the EFR program. Efforts should be made to address the clearance questions in a timely manner, as this can be a constraint to reseeding and the subsequent success of the EFR project. Cultural clearances must be performed in a cost-effective manner relative to the cultural values at risk. Where appropriate, Tribal input should be included in the development of NFRPs and EFRPs. Wildfires often expose cultural sites to vandalism, especially after these sites are flagged for treatment avoidance. Aerial surveillance to detect cultural site vandalism and all actions required to apprehend individuals vandalizing cultural sites are charged to the benefitting activity. Special cultural situations requiring EFR funding may be requested with a written justification included with the plan or supplement.*

#### *L. Treatment Specifications*

*All EFR treatments (fences, culverts, water bars, etc.) must comply with applicable BLM policy and standards (as specified in the Engineering Guide Specifications and Standard Drawings and Manual Section 9170). Treatments should be designed to be cost-effective and to meet rehabilitation objectives. Rehabilitation treatments which could cause unacceptable soil disturbance require input and recommendations from soil specialists on project design and mitigation.*

#### *M. Suppression Activity Damage*

*Damage to improvements or to resources caused by fire suppression activities should be repaired or restored using Emergency Fire Suppression funds (2821). This work should be completed prior to final demobilization of the suppression forces whenever practical. However, it may be more cost-effective and practical to delay some repairs to improve the chance of success. For example, repair of road damage by heavy engine traffic is not practical until sufficient moisture is present, usually in the fall. Ordinarily, road repairs should be limited to*

*\$5,000 or less and be completed within 10 months of wildland fire control. Also, it is usually better to wait to reseed fire control disturbances (hand or dozer lines) until the fall season in the Great Basin. The following repair activities (necessitated by suppression work) should be accomplished with wildland fire suppression, not EFR, funds:*

- 1. Replacement of soil and seeding vegetation on fire control lines.*
- 2. Construction of water bars on primary and secondary fire control lines.*
- 3. Repair of structural improvements or facilities (e.g., fences) damaged by suppression activity.*
- 4. Repair of damage caused by operating the Incident Command Base (spike camps and roads.)*

#### *N. Repair or Reconstruction of Improvements Damaged by Fire*

*The repair or replacement of improvements burned or damaged by fire is not authorized with the use of EFR funds. Consequently, other funding sources must be used for fences, corrals, guzzlers, recreation facilities, or other structures destroyed by fire. Sources of funds include program funds and contributed funds. It is also suggested that Field Offices make every attempt to share costs among program activities, administrative levels, and cooperators before requesting funds from the Washington Office. However, while alternative routes of funding are being developed at the Departmental level, estimated costs for repair or replacement of these facilities should be sent to the Washington Office for tracking purposes. It is also emphasized that the restoration of burned improvements can be planned and funded in subsequent years' budgets. In the event that the estimated cost is beyond any reasonable expectation or possibility of funding before the anticipated rehabilitation of the site, and the facilities will be needed when the site is ready for use, requests for additional funding should be made through WO-220 and WO-880 in the fiscal year the fire occurred.*

#### *O. Protective Fencing and Cattle Guards*

*Protective fences may be constructed or reconstructed, if burned, to protect burned areas from grazing during the recovery period for burned vegetation or the establishment period for new seedings. Protective fencing may serve as either temporary protection or as a permanent management fence. Temporary fences are generally installed where native rangeland will recover after a rest period from grazing, and the area will not require further special grazing management to maintain plant vigor or composition. Temporary fences should be moved to new EFR projects after the protection period is over. Permanent management fences are generally installed to protect a new EFR seeding from grazing during the establishment period and to manage the seeding after it is established to maintain the seeded species. Permanent fences should be placed around the perimeter of the burn to the degree possible, considering topography, rock outcrops, soils, existing fences, etc. Fencing that exceeds the amount required to protect new seedings or burned area should be funded with a benefitting sub-activity. The fencing of private land to keep nonpermittees' livestock off adjacent burned or rehabilitated public lands is the responsibility of the private landowner(s). Therefore, EFR funds will not be used to fence the private/public land boundary unless State laws require a different approach (e.g., herd districts are in place). Herding and total pasture or allotment exclusion from grazing (closure) are alternatives to consider in lieu of fencing. For example, if 80 percent of an*

*allotment or pasture is burned, it may be more cost-effective to close the grazing unit rather than fencing the burned area to allow 20 percent of the unit's former grazing capacity to be used. Cattle guards may be installed on County, Bureau, or State roads, highways, and areas of high recreation use, where a gate would present a safety hazard to the public. Cattle guards will not be installed with EFR funds on lightly traveled roads and two-track trails. Any cattle guard installed in conjunction with a temporary fence may be removed with EFR funds and be used on future EFR projects.*

#### *P. Vegetative Fuel Breaks/Greenstrips*

*Vegetative fuel breaks, e.g., greenstrips, are strips or blocks of fire-resistant vegetation placed at strategic locations within burned areas to reduce the size or frequency of future wildland fires. Vegetative fuel breaks may be installed with EFR funds if approved in an NFRP or EFRP. The plant species seeded in a vegetative fuel break should provide protection for the soil, water, and other resource values in addition to being fire-resistant. Vegetative fuel breaks may be planted outside the burned area for short distances (no more than 1 mile) to link existing fuel breaks, including greenstrips, natural barriers, roads, irrigated fields, etc. Vegetative fuel breaks may be planted across unburned "fingers" within the fire perimeter to increase their effectiveness in slowing or stopping future wildland fires.*

#### *Q. Revegetation of Burned Areas*

*Revegetation consists of either planting seed with equipment or transplanting, e.g., planting seedlings (live plants) with mechanical equipment or by hand. Transplanting is generally done with either shrub or tree seedlings.*

##### *1. Decision to Revegetate*

*Planting (by seeding or transplanting) of grasses, forbs and shrubs, and trees in burned rangelands, riparian areas, forests and woodlands is an appropriate use of EFR funds if:*

- a. Natural regeneration of plants will not establish sufficient cover in time to protect the burned site or off-site resources, such as dwellings, from unacceptable erosion or damage.*
- b. The vegetation that will establish after the fire is not acceptable.*
- c. Land use or activity plans require certain plant communities to meet objectives.*
- d. The use of trees as (or as part of) an EFR treatment is permitted only if the rehabilitation plan demonstrates that trees are necessary to minimize unacceptable change to ecosystem structure and function. This would include the prevention or mitigation of nonnative plant infestation. Acceptable uses may include:*

*(1) Circumstances where succession of native woody species and the eventual reestablishment of native communities that included tree species would be precluded by the immediate and aggressive invasion of nonnative species; e.g.,*

*where the natural reestablishment of native cottonwoods and willows in southwestern riparian areas is difficult due to the invasion of nonnative saltcedar or where stabilization of slopes using only grasses, forbs, and shrubs precludes natural recolonization by native tree species.*

*(2) Critical habitat for T&E species will be permanently impaired. In this circumstance, planting trees must significantly mitigate deleterious impacts to the species of concern within the time frame for EFR/BAER project completion; e.g., a tree planting project cannot be authorized if its purpose is to accelerate reforestation to benefit a species that requires old-growth forest for critical habitat.*

*(3) Use of trees as (or as part of) an EFR treatment is limited to no more than \$25,000 regardless of the percentage costs, unless approved by the Bureau Director, who may make the decision to approve or disapprove the use of trees in consultation with other bureaus and the Department.*

*It is essential that the potential for recovery of native or seeded vegetation and invasion by weeds be evaluated prior to making a decision whether to seed a burned area. Revegetation of burned areas is not an appropriate use of EFR funds if natural regeneration will result in a vegetation type that will meet EFR and land use plan objectives. Herbicide application may be funded with EFR funds after a wildland fire if noxious weeds are expected to increase to an unacceptable level (see Section III.U). The potential for weed invasion should be considered in developing the seed prescription. Don't include forb, shrub, or grass species that are susceptible to herbicides in the seed mixture if it is likely that weed control may be needed after the rehabilitation seeding is established. The FEIS is a good source of information on fire effects and recovery potential for many western plants. The Fire Effects Guide also provides useful information on fire effects. Fire severity as indicated by consumption of standing material, color of ash, depth of ash, and soil hydrophobicity, etc., is an indicator of the probability of the burned area to recover naturally and therefore not require seeding. Another source of information about potential species to be used in revegetation is the NRCS-USGS Biological Resources Division VegSpec website. The VegSpec is a web-based, expert system that aids technical people or managers in making sound decisions on what species to plant on specific sites. It is available on the World Wide Web at <http://plants.usda.gov> or can easily be accessed through the NRCS website. It integrates the NRCS soils, plants, and climate databases to select plants to solve conservation problems. Other sources of information on vegetation (including the potential for invasion by undesirable species), soils, and site potential (ecological site) should also be reviewed to help determine if seeding is necessary for the success of the rehabilitation project.*

*Untreated control areas, i.e., unseeded areas, should be incorporated into EFR treatments that include seedings to evaluate the recovery of native vegetation without the influence of revegetation treatments. This information is useful in making future decisions on the need to seed a burned area versus allowing it to recover naturally.*

## *2. What to Plant (Native versus Nonnative Plants)*

*Species planted on burned areas must provide the protection required by EFR plan objectives, be consistent with the appropriate land use/activity plan (including State Standards for Rangeland Health and Guidelines for Grazing Management), and be in compliance with the guidance contained in BLM Manual Section 1745, "Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife, and Plants." This manual states that: "native species shall be used, unless through the NEPA process it is determined that:*

- (1) Suitable native species are not available;*
- (2) The natural biological diversity of the proposed management area will not be diminished;*
- (3) Exotic and naturalized species can be confined within the proposed management area;*
- (4) Analysis of ecological site inventory information indicates that a site will not support reestablishment of a species that historically was part of the natural environment;*
- (5) Resource management objectives cannot be met with native species.*

*The Native/Nonnative Plant Worksheet helps EFR planners analyze the impacts of using nonnative plants and lists the criteria for selecting native plants for revegetation. This information is required for all NFRP supplements and EFRPs and can be included either as a separate worksheet or by incorporating all of the worksheet elements into an EA. In addition to using the criteria, using local seed sources for native plants is recommended, especially the proper subspecies of plants like big sage-brush. Important elements to consider in selecting a seed mixture that includes native plants include: a. Availability at a reasonable price. Reasonable price is not defined here because managers need the flexibility to make this determination on a case-by-case basis. Managers also need to consider that as the demand for native seed increases, more may be produced, ultimately reducing its cost. b. Adaptation to the area proposed for treatment (avoid use of "one size fits all" seed mixtures on landscapes with different site potentials). The use of local native genotypes is encouraged. c. Impacts of competition (weeds, other plants in the seed mixture, land uses) on native plant establishment and persistence. d. Land use plan decisions; e.g., natives only in WSAs. Use of native species is preferred to the use of nonnatives for rehabilitation projects. However, a mixture of native and nonnative species is preferable to using only nonnatives if all the desired natives are not available and if the use of nonnatives is consistent with land use plans, including the State Standards for Rangeland Health and Guidelines for Grazing Management. Competitive nonnatives, e.g., crested wheatgrass, or in some locations, yellow sweet clover, should be minimized in the seed mixture to facilitate the establishment and persistence of the native species. Each State should incorporate this guidance on planting natives into a State policy that recognizes local issues and needs.*

## *3. Seed Application*

*Planting techniques should be based on the seedbed requirements of different plants. For example, some species may need to be planted in separate rows or at different depths than other plant species. Seed should be drilled or covered by dragging a chain, harrow, or other implement. Aerial broadcast seeding should be used only where it has proven successful, based on experience or studies. Numerous scientific studies and technical specialists with experience should be consulted since success or failure of this type of project is contingent on proper seed application and coverage.*

#### *4. Timeliness*

*Seed should be planted during the appropriate season to ensure seed stratification (cold temperatures), germination, and establishment. Fall seedings are recommended for much of the public land managed by the BLM, particularly for sites requiring cool-season species revegetation. Spring seeding may be appropriate for warm-season species in certain regions, such as in the desert Southwest. Early spring transplanting of seedlings is recommended to better utilize available moisture, thereby improving the success of seedling establishment.*

#### *R. Testing of Seed and Vegetative Materials*

*All seed must be tested for noxious weeds to ensure compliance with Federal and State seed laws (a legal requirement). All seed should also be tested for purity and germination (contracting requirements). Certified seed ("blue tag") should be tested for the same factors (noxious weed, purity, and germination), as should all other seed, unless small quantities (less than 200 pounds) are being used (testing is still recommended). Tetrazolium tests, performed by State seed laboratories, may be used on shrub seeds and for species where dormant or hard seeds are common. Tetrazolium tests may also be authorized by BLM when seed laboratories do not have enough lead time to use a full germination test. The use of certified seed is highly recommended (when available) to ensure that desired genetic traits are present. The use of "source identified seed" is recommended when native seed is collected from wildland sites to ensure that a local or otherwise adapted seed source is used to revegetate the burned area. Straw and other vegetative materials (rice hulls) should be purchased as "certified weed-free" by a State agricultural agency or should be sampled and tested for noxious weeds prior to use.*

#### *S. Public Coordination and Consultation*

*Interested members of the public must be given reasonable opportunities for input and comment on all EFR plans. Consultation with resource users, other agencies, scientists, and private and public interests are recommended to a degree appropriate to the complexity and level of controversy associated with each EFR plan. The origin of plants used in revegetation (native or nonnative) or techniques used in planting can be controversial and should be addressed early in the EFR planning process. Due to the need for prompt action following a wildland fire, public participation may be more limited than with other types of nonemergency project proposals. However, the public may still appeal the Decision Record/Rationale for the EFRP or NFRP supplement, possibly delaying implementation of all rehabilitation treatments for at least 30*

*days. Therefore, every effort should be made to resolve issues with the interested public to avoid delays in implementing emergency treatments required to meet EFR objectives. During the course of coordination and consultation, excellent opportunities exist to make or improve partnerships with permittees, conservation groups, public volunteers, and State or local government agencies for funding, material, or labor for rehabilitation projects. Joint planning and implementation with other land management agencies are encouraged on multi agency fires.*

#### *T. Treatment of Rehabilitation Failures*

*Treatments (seedings, erosion control structures, etc.) installed through the EFR program sometimes fail. If EFR treatments fail due to natural factors, such as drought or flooding, retreatment (reseeding or reconstruction) may be considered. All retreatments must be approved by the State Director after determination that the proposed actions are still required to meet EFR program objectives (Section I.A). Retreatment of seedings, where one component of the mix did not successfully establish and other EFR objectives were met, is not appropriate with EFR funds. Proper timing and planting techniques will minimize the chances of project failure and the need for retreatment.*

#### *U. Pesticide/Fertilizer Use*

*The use of herbicides to control postfire noxious weeds is appropriate and may be funded through the EFR program if:*

- 1. The herbicides proposed are approved for use on public lands per the Record of Decision for the vegetation treatment. All other applicable label and environmental restrictions must be followed.*
- 2. The application of herbicides is necessary to keep noxious weeds from invading and dominating the postfire environment.*
- 3. The use of herbicides funded by the EFR program is limited to two growing seasons following fire control.*

#### *V. Monitoring*

*Monitoring to determine if EFR objectives were met, as well as evaluating new technology, is encouraged through the EFR program. Monitoring studies, including use supervision, may be conducted with EFR funds for up to three growing seasons following wildland fire control. Monitoring priority should be given to those areas where unique treatments were implemented or areas with greater resource values or public concerns. Priority for those areas where monitoring can detect changes between untreated control (natural revegetation) and treated (revegetation) areas should also be considered. Monitoring intensity should be commensurate with the complexity of the rehabilitation treatments and level of concern or controversy associated with the EFR plan. Monitoring methods are addressed in the Interagency Technical References Sampling Vegetation Attributes and Utilization Studies and Residual Measurements, or in-place monitoring protocols. Cooperative efforts in monitoring the results of EFR projects are encouraged; these efforts could be with neighboring offices, agencies, or universities.*

*Monitoring information and results should be retained in a central location in at least one permanent retention file (EFR project, monitoring, or allotment files). Information gained in monitoring is strongly encouraged to be shared through professional papers, technical bulletins, symposia, workshops, etc. Long-term monitoring related to treatment longevity and effectiveness and the plant community dynamics of the project is encouraged through normal funding (not EFR).*

#### *W. Evaluation of Experimental or New Technology*

*The evaluation of new technology (equipment, plant materials, etc.) on a limited scale is appropriate through the EFR program if the potential to improve cost efficiency or success of EFR treatments is likely. The evaluation of experimental technology may include EFR monitoring studies or contracting of studies with research agencies or universities for more complex technologies. Caution must be used in the use of experimental technology to maintain the appropriate size and scope of treatment relative to the overall project. If the monitoring or evaluation of experimental technology involves an outside source (university or private contractor), Washington Office approval is required. Results of all evaluations of experimental technology funded through the EFR program will require a technology transfer product upon completion of the evaluation. As noted above, the product may be in the form of technical notes or bulletins for distribution through the BLM, professional papers, presentations, or other products. These products should describe the problem, solution, methods, or techniques and should be directed to a variety of audiences, including the public where feasible. At a minimum, the appropriate party (BLM office, university, etc.) should be required to publish and distribute a BLM Technical Note. Publication of results in scientific journals is encouraged, especially if outside cooperators conduct the evaluation.*

#### *X. Recovering EFR Costs of Human-Caused Wildland Fires*

*Costs associated with rehabilitating burned range or forest lands should be recovered to the extent possible from the person or persons responsible if the fire was human caused. Reimbursement of the EFR program should take place if the treatments required to protect burned areas are installed with EFR funds and costs are later recovered.*

#### *Y. EFR Funding Approval*

*The State Director has delegated authority to approve funding or redelegate the approval authority for all EFR plans describing actions costing less than \$100,000. Plans costing more than \$100,000 to implement require Washington Office approval for funding although primary EFR plan review for technical and procedural content remains at the State Office level. The Washington Office may review EFR plans for policy and fiscal accountability and consistency. All EFR plans must be reviewed at the level above the plan preparation/approval level prior to final approval by the authorized official. Each State must develop a policy within 1 year of final approval of this handbook to accommodate this review requirement in accordance with the complexity/cost of EFR plans and consistent with the State organization. An EFR Project Summary for all EFRPs or NFRP supplements should be forwarded by the State Office to the Washington Office for budget tracking purposes. EFRPs or NFRP supplements costing more*



than \$100,000 to implement must also be forwarded, within 3 weeks of the control of the fire, with a request for approval. All EFR plans costing less than \$100,000 will be considered funded after approval by the authorized official unless the Washington Office has withdrawn EFR approval authority due to lack of funds. Within 7 calendar days of receipt, the State Office should submit appropriate EFR documents to the Washington Office. The Washington Office has 7 calendar days after receipt of the required documents to notify the appropriate State Director(s) of funding approval or plan modification. Documentation of EFR plan approval by the Washington Office or the State Office may be a phone call or fax, followed by original hard-copy documentation. The authority to obligate funds may be temporarily withdrawn from State Directors by the BLM Budget Officer when all available emergency fire rehabilitation funds have been allocated.

#### *Z. EFR Policy on Prescribed Fires*

*Under the Federal Wildland Fire Policy, approved by the Secretary of the Interior in December 1995, all wildland fire (both planned and unplanned ignitions) will be managed by the "appropriate management action." In general, planned ignitions and unplanned ignitions that are managed to obtain resource benefits are not appropriate candidates for emergency rehabilitation. In all cases, damages caused by suppression actions are repaired, with associated costs charged against the incident (fire) project code. All wildland fires that escape approved management actions will be managed in accordance with decisions in a Wildland Fire Situation Analysis (WFSA). Rehabilitation costs are included in the cost analysis portion of the WFSA. Further questions on this subject should be directed to either WO-880 or WO-220.*

#### *AA. Cadastral Survey*

*Cadastral survey work will only be done with EFR funds where land ownership adjacent to proposed EFR treatments is in question and not where there are long-standing, large-scale ownership questions. Section and quarter corners should be located and flagged for avoidance prior to any surface-disturbing activity that could result in damage to or destruction of the corner.*

#### *BB. Clean Water Act Compliance*

*Certain EFR treatments may be regulated under the Clean Water Act. The placement of earthen dams and/or straw bale or rock check dams in stream channels may have impacts to aquatic resources and thus require authorization under Sections 404 and 401 of the Clean Water Act.*

*1. Section 404. Rehabilitation activities, such as the installation of straw check dams, rock dams, culverts, and other measures intended to stabilize ground cover and slow the rate of soil erosion in perennial and intermittent stream channels and other waters of the U.S., including wetlands, require written notification to the local Corps of Engineers District Office. Locations of these types of treatments should be included in the written notification. The Corps of Engineers may require modifications to EFR treatments to ensure that the environmental impacts to stream channels or wetlands are minimal. In the unusual circumstances that adverse impacts of the proposed activities are more than*

*minimal, the Corps will notify the applicant that an individual permit is required. Examples of certain EFR activities that may require Section 404 authorization include:*

- a. Placing rocks in a stream channel to create a check dam.*
- b. Where roads or trails are being rehabilitated, the Corps of Engineers needs to be notified if the activity involves the discharge of fill material into stream channels or wetlands. Installing a larger culvert to accommodate increased flow in a stream channel would require Corps notification; however, cleaning sediment-clogged culverts where that material is not discharged into the waterway would not require notification or permitting.*

*2. Section 401. Section 401 of the Clean Water Act allows State and Tribal governments to review and approve or deny Federal permits and licenses that might result in a discharge to State or Tribal waters. States or Tribes make these decisions primarily by evaluating how the activity will affect their water quality standards and water-dependent resources, including salmonids. Activities in the EFR program requiring Section 404 authorization must receive certification from the State that an activity meets its water quality standards.*

#### *CC. Standards for Rangeland Health and Guidelines for Grazing Management*

*On August 21, 1997, new BLM grazing regulations were implemented that, among other things, established a frame-work for the development of Standards for Rangeland Health and Guidelines for Grazing Management (43 CFR 4180.1). These standards and guidelines were developed on a State-by-State basis in coordination with Resource Advisory Councils to ensure that rangelands were being managed for long-term health (e.g., proper functioning of ecological processes, “stable watersheds,” clean water, and T&E species habitat). BLM State-specific standards and guidelines should be reviewed and incorporated as part of the EFR planning process to ensure compliance with the intent of these regulations and the land use plan in concert with the objectives of the EFR program. All existing NFRPs should be reviewed and modified (if necessary) prior to the next fire season to ensure compliance with standards and guidelines. The EFR program is not intended to fully restore ecological processes per the Standards for Rangeland Health. The purpose of the EFR program is to stabilize burned areas (prevent unacceptable erosion and invasion of weeds) so as not to preclude the eventual restoration of ecological processes through either natural succession or application of additional restoration practices. The application of additional restoration processes to obtain full ecological process function must be funded through sources other than the EFR program.*

Rehabilitation for wildfire, prescribed fire or noxious weed management areas would be consistent with the guidance of the Emergency Fire Rehabilitation Guidance to “stabilize biotic communities to minimize unacceptable change to ecosystem structure and function of the public lands”.

Rehabilitation as outlined in this manual for Threatened and Endangered Species - “The policy of the BLM is to conserve Threatened and Endangered plant and animal species through conservation of the habitats upon which they depend and work closely with the U.S. Fish and Wildlife Service [National Marine Fisheries Service] on species protection. All fire rehabilitation plans should be reviewed to determine if T&E species or their habitat would be adversely affected by the implementation of rehabilitation treatments. The BLM will consult

with the U.S. Fish and Wildlife Service (or National Marine Fisheries Service, as appropriate) on all actions that may affect listed species or its habitat to ensure compliance with Section 7 of the Endangered Species Act.”

## **B. Monitoring**

Monitoring of prescribed fire areas and fire rehabilitation areas would be conducted in conjunction with vegetative monitoring done within the range management program. This includes vegetation component, age, class and structure measures. Several monitoring techniques are used to obtain this information. On prescribed fire areas and fire rehabilitation areas this monitoring would be done on an annual basis. In addition, following treatment, units will be monitored to determine the project’s effectiveness, fire effects, and recovery rates using photo-point references, plots, and individual observations.

## **C. Actions for Coverage**

### **1. Prescribed Fire Management**

**NMFS & USFWS:** The BLM is seeking coverage of prescribed burn projects within the entire John Day basin including the Plan area boundaries. Prescribed fire would not burn within the RHCA (typically 300' buffer), this would avoid burning in designated critical habitat, and mitigation stipulations as outlined further protect critical habitat from impacts. Individual burn projects that would burn within these areas would be consulted on individually. In the event that a burn inadvertently extends into the RHCA (typically 300' buffer) associated with designated critical habitat, consultation would be reinitiated to address rehabilitation efforts.

### **2. Fire Rehabilitation**

**NMFS & USFWS:** Fire rehabilitation actions can take place after wild or prescribed fire. This includes several types of actions:

1. Exclusion of livestock and wild horse and burros from burned pastures until vegetation has recovered
2. Restricting public access to burned areas until vegetative recovery
3. Installation of protective fencing to prevent livestock and/or public access to burned areas
4. Replanting of shrubs and grasses to burned areas
5. Planting seed during appropriate season by hand or with mechanical equipment such as a rangeland drill
6. Seed is drilled or covered by dragging a chain, harrow or other implement
7. Installation of straw check dams, rock dams, culverts, and other measures intended to stabilize ground cover and slow the rate of soil erosion in perennial and intermittent stream channels
8. Ripping, contour furrowing or installation of water bars on created roads and fire lines

The BLM is seeking coverage of these activities # 1-6 described above in all areas, and activity # 7 outside of critical habitat areas and activity # 8 outside of all RHCA's areas. These activities are done after wildfire, prescribed fire or noxious weed treatment. Fire rehabilitation efforts outside the scope of these actions and which would involve RHCA's containing designated critical habitat would reinitiate consultation on those actions.

## D. Summary of Effects and Effects Analysis

### Fire Suppression Activities

	Direct Impacts	Indirect Impacts
Affects on Steelhead	ND	ND
Affects on Critical Habitat	ND	ND
Affects on Bull Trout	ND	ND

Fire suppression activities in the John Day River corridor are outside the scope of this plan. Consultation on broad scale and complete activities will be addressed separately and at a later time therefore no determinations on these types of actions will be made at this time.

### 1. Prescribed Fire Management

#### Prescribed Fire Management

	Direct Impacts	Indirect Impacts
Affects on Steelhead	NE	NLAA
Affects on Critical Habitat	NE	NLAA
Affects on Bull Trout	NE	NLAA

Prescribed fire management is aimed at restoring functioning watershed activities such as water movement by eliminating vegetation that decreases soil absorption ability or capacity and returning vegetation to natural or native conditions. It also prevents future catastrophic loss due to wildfire which may burn hot enough to cause soils to become hydrophobic and lead to increased overland water flow, increased erosion and an increase in drainage network. The long term goals of this program are to:

1. Restore the health and diversity of vegetation
2. Control the spread of western juniper
3. Reduce hazard fuels
4. Improve decadent aspen communities
5. Improve long-term hydrological regimes (water quality, flow, timing)
6. Increase forage for wildlife and livestock

Prescribed burning can serve to improve soil conditions by reducing the amount of bare ground and increasing grass cover and organic matter. Gregory et al. (1991) states that under natural conditions, riparian plant communities have a high degree of structural and compositional

diversity, reflecting the history of past disturbances such as floods, fire, wind, grazing, plant disease, and insect outbreaks.

Without periodic fire, species such as western juniper and sagebrush, increase in abundance under recent historical fire suppression methods. Research shows that expansion and increasing abundance of western juniper results in watershed degradation, which seriously affects productivity, water quantity and quality (Bedell et al, 1993). Sites occupied by juniper can release up to 1,600 lbs. per acre of sediment during rain storms or from the overland flow of melting snow. On semi-arid sites, water interception and use by western juniper causes a decline in forbs, grasses, and shrubs in the spaces between juniper canopies. This increases bare mineral soil in juniper-dominated watersheds (Bedell et al, 1993).

All burn units proposed for treatment would be evaluated for special resource needs (including Threatened or Endangered species habitat) and mitigating measures would be covered in the burn plan to ensure project objectives can be met, or the unit will be dropped from consideration. Some mitigation measures that will be considered in the development of the burn plans are:

1. Burn primarily in late summer or fall when most vegetation is dormant. Winter and spring burning may be done if needed to achieve objectives.
2. Mimic the natural historical fire regime. Burn in a mosaic pattern with irregular boundaries to create diversity and maximum edge effect to ensure adequate wildlife cover.
3. Use existing roads, trails or other natural fuel breaks to contain the prescribed fire.
4. Avoid allowing prescribed fire to enter the riparian zone of influence along perennial or fish bearing streams

Treatments would primarily occur on sagebrush-juniper plant associations, but may include ponderosa pine, and aspen.

Prescribed fire would generally improve habitat conditions by diversifying habitat structure, providing short-term improvement in forage palatability, and increasing the availability of herbaceous forage plants. Some habitat changes would result in adverse impacts to species reliant on large homogeneous blocks of vegetation types. Most vegetation types are dependent on fire return intervals that have been modified over the last century. Returning these habitats to historic fire interval levels, or management close to these levels, would generally increase the quality of habitat.

Prescribed fire projects are specifically designed to avoid burning in riparian areas with sensitive species such as steelhead. According to the guidelines and mitigation stipulations for prescribed fire as laid out in the John Day Basin Prescribed Fire Project EA, effects of prescribed fire would tend to benefit and improve condition in the uplands and maintain conditions in riparian areas. The effects of this action are to restore or maintain the relevant indicators in areas where fire has occurred, regardless of the condition of the baseline indicators, in some instances short term

detrimental effects may occur, such as increased sediment production or delivery to streams, or changes in peak/base flow regimes.

## **Rationale for Checklist Ratings of Effects for Population and Environmental Indicators for Prescribed Burning in the John Day Basin**

**Water Temperature:** Water temperatures would not be affected by this action. The riparian zone of influence adjacent to all perennial streams (fish-bearing or non fish-bearing) will be avoided from burning activities, by all reasonable methods.

**Sediment/Turbidity:** Minor impacts to sediment levels in perennial streams is expected. This would be a temporary condition until burned areas regrow. Intact vegetation in riparian areas will effectively filter most sediments mobilized from upland burned areas. The important aspects of post-fire hydrology are typically water retention and water quality. High intensity burns associated with wildfires can result in hydrophobic soil conditions which may decrease infiltration and absorption rates and limit water retention capacities. The effects of non-wettable soil layers are primarily the same as any dense or hard pan soil layer that restricts water movement through the soil, and often result in an increase in overland flows and surface erosion. Prescribed burns are primarily lower intensity and are designed to minimize hydrophobicity.

**Chemical Contamination/Nutrients:** This indicator will not be affected significantly, since prescribed burns minimize the volatilization of nutrients like nitrogen because of lower burn intensities.

**Physical Barriers:** This activity will not cause migration barriers.

**Substrate Embeddedness:** This indicator is not expected to be adversely affected for the same reasons discussed under Sediment/Turbidity. Riparian vegetation will also minimize any sediment delivery to the stream which could increase substrate embeddedness.

**Large Wood:** Large wood would not be affected by this action. The riparian zone of influence adjacent to all perennial streams (fish-bearing or non fish-bearing) will be avoided from burning activities. Effects to future or current levels of instream large wood would be minimal.

**Pool Frequency:** No adverse effects to pool frequencies are expected because activities within RHCA's will be avoided.

**Pool Quality:** No adverse effects to pool quality are expected because activities within RHCA's will be avoided.

**Off-Channel Habitat:** No adverse effects to off-channel habitats are expected because activities within RHCA's will be avoided.

**Refugia:** No adverse effects to riparian reserves are expected because activities within RHCA's will be avoided.

**Wetted Width/Max Depth Ratio:** No adverse effects to width to depth ratios are expected because activities within RHCA's will be avoided.

**Streambank Condition:** No adverse effects to streambank conditions are expected because activities within RHCA's will be avoided.

**Floodplain Connectivity:** No adverse effects to floodplain connectivity are expected because activities within RHCA's will be avoided. Wetland areas and riparian vegetation will be maintained.

**Changes in Peak/Base Flow:** No adverse effects to Peak/Base flows are expected for rationale described under Sediment/Turbidity.

**Drainage Network Increase:** Minor changes are expected to the drainage network, until burned areas experience regrowth of vegetation. Subsequent regrowth is expected to be denser in the future, minimizing drainage networks in the future.

**Road Density and Location:** Road densities could increase slightly on a temporary basis, until fireline roads are revegetated from seeding, following the burn.

**Disturbance History:** Disturbance history (% ECA) will not be effected by this action, because no timber harvest is prescribed in this activity.

**Riparian Reserves:** As described in the environmental baseline section, no assessment of riparian potential has occurred. However, this activity will have no effect on riparian vegetation communities, for reasons described under Water Temperature.



Table 29. Checklist for documenting environmental base line and effects of proposed actions on relevant indicators for areas within the John Day River basin with regard to Prescribed Fire.

<b><u>PATHWAYS:</u></b> <b>INDICATORS</b>	<b>ENVIRONMENTAL BASELINE</b>			<b>EFFECTS OF THE ACTION(S)</b>		
	<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>	<b>Restore</b>	<b>Maintain</b>	<b>Degrade</b>
<b><u>Water Quality:</u></b>	N/A	X	X		X	
Temperature						
Sediment	X	X	X		X-/X+	
Chem. Contam./Nut.	X	X			X	
<b><u>Habitat Access:</u></b>	X, N/A	X			X	
Physical Barriers						
<b><u>Habitat Elements:</u></b>	X, N/A	X	X		X-/X+	
Substrate						
Large Woody Debris	N/A	X	X		X	
Pool Frequency	X, N/A		X		X	
Pool Quality	X, N/A	X			X	
Off-Channel Habitat	N/A	X	X		X	
Refugia	N/A	X	X		X	
<b><u>Channel Cond. &amp; Dyn:</u></b>	X, N/A	X	X		X	
Width/Depth Ratio						
Streambank Cond.	X, N/A	X	X		X	
Floodplain Connectivity	X	X			X	
<b><u>Flow/Hydrology:</u></b>	X, N/A	X	X		X-/X+	
Peak/Base Flows						
Drainage Network Increase	X	X			X-/X+	
<b><u>Watershed Conditions:</u></b>	X	X			X	
Road Dens. & Loc.						
Disturbance History	X, N/A				X	
Riparian Reserves	N/A				X	

\*\* In the maintain category X+ denotes effects which will maintain the indicator but which will have beneficial effects but not to the extent to restore the indicator, X- denotes effects which will maintain the indicator but which will have detrimental effects but not to the extent to degrade the indicator

**Answers to the Dichotomous Key For Making ESA Determination of Effects for Prescribed Burning in the John Day Basin;**

**1. Are there any proposed/listed anadromous/resident salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?**

Yes, Summer Steelhead and bull trout.

**2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?**

No, the proposed burn activities are outside of the riparian zone of influence. The nature of low intensity, prescribed burn strategies minimize off site soil erosion and sediment delivery to stream channels.

**3. Does the proposed action(s) have the potential to result in “take” of proposed/listed anadromous/resident salmonids or destruction/adverse modification of proposed/designated critical habitat?**

There is a negligible (extremely low) probability of take of proposed/listed anadromous/resident salmonids or destruction/adverse modification of habitat. Implementing mitigation measures discussed above should adequately protect water quality, channel stability, riparian vegetation communities and watershed conditions. **Not likely to adversely affect**

## □ 2. Fire Rehabilitation

### Fire Rehabilitation

	Direct Impacts	Indirect Impacts
Affects on Steelhead	NE	NE
Affects on Critical Habitat	NE	NLAA
Affects on Bull Trout	NE	NLAA

Emergency fire rehabilitation(EFR) is engaged after suppression activities in order to reclaim and rehabilitate any resource damage caused by suppression activities such as road or fire line creation. EFR also includes reseeded of burned over areas and reconstruction/repair of fences or other structures. Rehabilitation efforts are designed to “stabilize biotic communities to minimize unacceptable change to ecosystem structure and function of the public lands”.

Rehabilitation would occur on burned over areas, typically seed would be native or desirable non-native species. Seed would be planted either aurally or with a rangeland drill. OHV’s would be used with the rangeland drill to plant seed. Seeding involves using a rangeland drill which creates a small furrow and then drops seed in to this furrow. This usually occurs on rocky areas and therefore the use of disking is not applicable. This procedure also limits the potential for erosion and subsequent downstream sedimentation. In areas with slopes greater than 30% seeding is done via helicopter and therefore no ground disturbance occurs. Structure repair such as fence construction or repair or building repair would be done using existing roads or OHV’s in less accessible areas. OHV’s would only be used to transport materials when topography permits. Erosion control devices such as check dams installed in ephemeral drainages to minimize sediment transport. Ripping or contour furrowing of created roads and fire lines would minimize sedimentation and increase water retention in soil. Installation of water bars will dissipate water runoff and minimize erosion in steep areas of fire lines and roads.

Rehabilitation activities tend to improve and restore environmental conditions regardless of baseline indicators.

**Rationale for Checklist Ratings of Effects for Population and Environmental Indicators for Fire Rehabilitation within the John Day River Corridor including mainstem river and tributary areas as outlined in Chapter 2.**

**Water Temperature:** According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Rehabilitation of fire areas would tend to restore vegetative structure within burned areas and therefore improve or maintain this parameter when seeding occurs within RHCA boundaries..

**Sediment/Turbidity:** Potentially a small amount of sediment could enter the streams from actual rehabilitation actions such as road reclamation or water bar installation. Drainages without designated critical habitat determined to be high risk for erosion would have temporary sediment dams installed to prevent excessive sediment movement downstream. Reseeding and regrowth of native vegetation will lead to stronger riparian bank systems and will aid in trapping sediments rather than creating them.

**Chemical Contamination/Turbidity:** Rehabilitation of fire areas would tend to restore vegetative structure within burned areas and therefore provide vegetation structure that would filter chemicals which may be residual from fire suppression efforts and minimize their transport to stream or critical habitat areas.

**Physical Barriers:** Rehabilitation of fire areas would not affect this parameter, unless suppression activities created such a physical barrier the barrier would be removed and passage for fish restored.

**Substrate Embeddedness:** Potentially a small amount of sediment could enter the streams from actual rehabilitation. Reseeding and regrowth of native vegetation after this treatment will limit future sediment production on these sites. This amount of sediment should not be significant enough to measurably increase substrate embeddedness above current levels.

**Large Wood:** Rehabilitation of fire areas would enhance the long term capability of the system to provide large wood through planting of young stock. In the short term rehabilitation will not affect this parameter or restore large wood losses that may have occurred during the initial fire.

**Pool Frequency:** Rehabilitation of fire areas would tend to restore vegetative structure within burned areas and therefore through the establishment of replacement vegetation in areas adjacent to streams maintain this parameter. In areas where vegetation changes occur from vegetation that inhibits proper riparian function such as juniper to vegetation that promotes proper riparian function such as willows or alders, over time morphology and habitat characteristics would tend to be enhanced also.

**Pool Quality:** Rehabilitation of fire areas would tend to restore vegetative structure within burned areas and therefore improve or maintain this parameter. See discussion on pool frequency for similar effects.

**Off-Channel Habitat:** Rehabilitation of fire areas would tend to restore vegetative structure within burned areas and therefore improve or maintain this parameter. See discussion on pool frequency for similar effects.

**Refugia:** Rehabilitation of fire areas would tend to restore vegetative structure within burned areas and therefore improve or maintain this parameter. See discussion on pool frequency for similar effects.

**Wetted Width/Max Depth Ratio:** Rehabilitation of fire areas would tend to restore vegetative structure within burned areas and therefore improve or maintain this parameter. See discussion on pool frequency for similar effects.

**Streambank Condition:** Rehabilitation of fire areas would tend to restore vegetative structure within burned areas and therefore improve or maintain this parameter. See discussion on pool frequency for similar effects.

**Floodplain Connectivity:** Rehabilitation of fire areas would tend to restore vegetative structure within burned areas and therefore improve or maintain this parameter. See discussion on pool frequency for similar effects.

**Changes in Peak/Base Flow:** Rehabilitation of fire areas would tend to restore vegetative structure within burned areas and potentially alter upland vegetation and in effect increase upland water storage and decrease peak flows within a drainage.

**Drainage Network Increase:** Rehabilitation of fire areas would tend to restore vegetative structure within burned areas as well as reclaim areas such as newly created roads or fire lines as a result of suppression activities, and therefore improve or maintain this parameter.

**Road Density and Location:** Rehabilitation of fire areas would tend to restore vegetative structure within burned areas as well as reclaim areas such as newly created roads or fire lines as a result of suppression activities, and therefore improve or maintain this parameter.

**Disturbance History:** Rehabilitation of fire areas would tend to restore vegetative structure within burned areas and therefore maintain this parameter.

**Riparian Reserves:** As described in the environmental baseline section, no assessment of riparian potential has occurred. Seeding of fire areas would tend to restore vegetative structure within burned areas and therefore not affect or maintain this parameter.

Table 30. Checklist for documenting environmental base line and effects of proposed actions on relevant indicators for areas within the Proposed plan boundaries with regard to Fire Rehabilitation.

<b><u>PATHWAYS:</u></b> <b>INDICATORS</b>	<b>ENVIRONMENTAL BASELINE</b>			<b>EFFECTS OF THE ACTION(S)</b>		
	<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>	<b>Restore</b>	<b>Maintain</b>	<b>Degrade</b>
<b><u>Water Quality:</u></b>	N/A	X	X		X+	
Temperature						
Sediment	X	X	X		X-/X+	
Chem. Contam./Nut.	X	X			X+	
<b><u>Habitat Access:</u></b>	X, N/A	X		X	X	
Physical Barriers						
<b><u>Habitat Elements:</u></b>	X, N/A	X	X		X-/X+	
Substrate						
Large Woody Debris	N/A	X	X		X/X+	
Pool Frequency	X, N/A		X		X	
Pool Quality	X, N/A	X			X	
Off-Channel Habitat	N/A	X	X		X	
Refugia	N/A	X	X		X	
<b><u>Channel Cond. &amp; Dyn:</u></b>	X, N/A	X	X		X	
Width/Depth Ratio						
Streambank Cond.	X, N/A	X	X		X	
Floodplain Connectivity	X	X			X	
<b><u>Flow/Hydrology:</u></b>	X, N/A	X	X		X+	
Peak/Base Flows						
Drainage Network Increase	X	X			X+	
<b><u>Watershed Conditions:</u></b>	X	X			X+	
Road Dens. & Loc.						
Disturbance History	X, N/A				X	
Riparian Reserves	N/A				X	

\*\* In the maintain category X+ denotes effects which will maintain the indicator but which will have beneficial effects but not to the extent to restore the indicator, X- denotes effects which will maintain the indicator but which will have detrimental effects but not to the extent to degrade the indicator

Answers to the Dichotomous Key For Making ESA Determination of Effects for Fire Rehabilitation in the John Day River basin and tributary reaches as defined in Chapter 2.

**1. Are there any proposed/listed anadromous/resident salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?**

Yes Summer Steelhead, and bull trout.

**2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?**

No, fire rehabilitation strategies and applications were designed to attain or protect the relevant properly functioning indicators, and restore their functioning after wildfire and prescribed fire actions.

**3. Does the proposed action(s) have the potential to result in “take” of proposed/listed anadromous/resident salmonids or destruction/adverse modification of proposed/designated critical habitat?**

Fire rehabilitation actions are designed to improve and restore relevant indicators. This action will not result in “Take” of listed anadromous/resident salmonids or in the destruction or adverse modification of designated critical habitat. Upslope actions to direct overland flow and decrease the drainage network such as reclamation or water barring of created roads or fire lines will serve to minimize erosion and sediment delivery to stream systems. The actions themselves, while ground disturbing in nature, will decrease the overall amount of erosion occurring as a result of the initial fire through soil exposure and lack of vegetative erosion controls. Reseeding will provide the vegetative erosion controls to retain soil in upslope areas. Replanting of proper riparian shrubs species in the event wildfire consumes riparian vegetation will also lead to stabilization of streambank areas. The installation of small, temporary erosion control dams in areas outside designated critical habitat areas will further minimized sediment delivery to critical habitat areas. There is a significant beneficial effect of fire rehabilitation actions which stabilizing upslope soil and decreasing instream sediment delivery to critical habitat areas. **Not Likely to Adversely Affect**

## **VI. Grazing**

### **A. Proposed Actions and Program Description**

Grazing on public lands is guided by several laws, and regulations - the Taylor Grazing Act (43 USC 315), 43 CFR 4100 Regulations, Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington, and the Wild and Scenic Rivers Act (16 USC 1271). The proposed management plan is aimed at protecting and enhancing the outstandingly remarkable values (ORV's) for which the wild and scenic areas were designated. These ORV's include anadromous fish species such as the steelhead. Therefore all actions including grazing actions are administered to protect and enhance those values.

In accordance with this guidance specific actions have been determined on an allotment by allotment basis to achieve these goals of protecting and enhancing the anadromous fish values in the John Day River Corridor. There are approximately 1030 riverbank miles (or 515 river miles) on the John Day mainstem, North Fork, Middle Fork and South Fork. The public land portion is 341.9 riverbank miles, or 33%, 97.2 of which are managed by the Umatilla and Wallowa-Whitman National Forests (segment 8). Within the Wild and Scenic designated segments of the river (Segments 1, 2, 3, 8, 10 and 11), 197.8 public riverbank miles are managed by the BLM. Of the 687.7 private riverbank miles, approximately 429.8 (62%) are currently outside of BLM grazing allotments. Uses along these riverbanks are predominantly agricultural fields, pasture, transportation ( roads) and recreation. Within the Wild and Scenic designated segments of the river, 162.2 private riverbank miles are private lands managed in conjunction with public lands via an allotment management plan.

Only in Segment 8, the segment managed by the Forest Service, is the position of public lands in the Wild and Scenic designated segments upstream from private lands. The BLM manages approximately 8 percent of the land in the John Day Basin. Approximately 56 percent of the lands managed by the BLM are located in the lower subbasin (below Kimberly). The amount and quality of water (such as temperature and sediment load), as well as the seed sources for riparian vegetation, have been influenced by land management practices largely beyond the jurisdiction of the BLM by the time the water reaches the segments of the river which include substantial proportions of public land.

Of the 197.8 public land river bank miles in the designated segments of the river, 71.6 public riverbank miles would be excluded from grazing, 18.2 would be in non-use but could be grazed if authorized, 105.4 would be under riparian oriented management and 2.6 would be under non-riparian oriented management and awaiting land exchange opportunities for lands elsewhere in the Wild and Scenic River corridor.

Specific proposed actions by allotment are described in the John Day River Proposed Management Plan Volume 2, Appendix L, for further clarification please refer to that document.

The BLM has instituted several standards for grazing with the plan boundaries these include:



## I. Compliance standard for authorized grazing.

The objectives of the compliance standards would be to identify cooperation problems that are likely to lead to an inadequate recovery determination (see below) and to resolve the problems before degradation occurs. Livestock operator compliance with the authorized grazing use would be monitored throughout the year, every year. All cooperating state, federal and tribal personnel on the river in an official capacity would be trained to identify and document livestock trespass. All incidence of trespass would be documented and recorded in an evaluation file. Agency procedures for resolving unauthorized grazing are detailed in 43 CFR 4140, 4150, 4160 and 4170. The following excerpt from the CFR describes those procedures:

### *Subpart 4140-Prohibited Acts*

#### *Sec. 4140.1 Acts prohibited on public lands.*

*The following acts are prohibited on public lands and other lands administered by the Bureau of Land Management:*

*(a) Grazing permittees or lessees performing the following prohibited acts may be subject to civil penalties under Sec. 4170.1:*

- (1) Violating special terms and conditions incorporated in permits or lease,*
- (2) Failing to make substantial grazing use as authorized for 2 consecutive fee years, but not including approved temporary nonuse, conservation use, or use temporarily suspended by the authorized officer,*
- (3) Placing supplemental food on these lands without authorization.*
- (4) Failing to comply with the terms, conditions, and stipulations of range improvement cooperative agreements or range improvement permits;*
- (5) Refusing to install, maintain, modify, or remove range improvements when so directed by the authorized officer.*
- (6) Unauthorized leasing or subleasing as defined in this part.*

*(b) Persons performing the following prohibited acts related to rangelands to civil and criminal penalties set forth at §§ 4170.1 and 4170.2:*

- (1) Allowing livestock or other privately owned or controlled animals to graze on or be driven across these lands:*
  - (i) Without a permit or lease, and annual grazing authorization. For the purposes of this paragraph, grazing bills for which payment has not been received do not constitute grazing authorization.*
  - (ii) In violation of the terms and conditions of a permit, lease, or other grazing use authorization including, but not limited to, livestock in excess of the number authorized;*
  - (iii) In an area or at a time different from that authorized; or*
  - (iv) Failing to comply with a requirement under Sec. 4130.5(c) of this title.*
- (2) Installing, using, maintaining, modifying, and/or removing range improvements without authorization:*
- (3) Cutting, burning, spraying, destroying, or removing vegetation without authorization;*
- (4) Damaging or removing U.S. property without authorization;*

(5) Molesting, harassing, injuring, poisoning, or causing death of livestock authorized to graze on these lands and removing authorized livestock without the owner's consent;

(6) Littering;

(7) Interfering with lawful uses or users including obstructing free transit through or over public lands by force, threat, intimidation, signs, barrier or locked gates;

(8) Knowingly or willfully making a false statement or representation in base property certifications, grazing applications, range improvement permit applications, cooperative agreements, actual use reports and/or amendments thereto;

(9) Failing to pay any fee required by the authorized officer pursuant to this part, or making payment for grazing use of public lands with insufficiently funded checks on a repeated and willful basis;

(10) Failing to reclaim and repair any lands, property, or resources when required by the authorized officer;

(11) Failing to reclose any gate or other entry during periods of livestock use.

(c) Performance of an act listed in paragraphs (c)(1), (c)(2) or (c)(3) at this section where Public land administered by the Bureau of Land Management is involved or affected, the violation is related to grazing use authorized by a permit or lease issued by the Bureau of Land Management, and the permittee or lessee has been convicted or otherwise found to be in violation of any of these laws or regulations by a court or by final determination of an agency charged with the administration of these laws or regulations, and no further appeals are outstanding, constitutes a prohibited act that may be subject to the civil penalties set forth at § 4170.1-1.

(1) violation of Federal or State laws or regulations pertaining to the:

(i) placement of poisonous bait or hazardous devices designed for the destruction of wildlife:

(ii) application or storage of pesticides, herbicides, or other hazardous materials:

(iii) alteration or destruction of natural stream courses without authorization,

(iv) pollution of water sources;

(v) illegal take, destruction or harassment, or aiding and abetting in the illegal take, destruction or harassment of fish and wildlife resources: and

(vi) illegal removal or destruction of archeological or cultural resources;

(2) violation of the Bald Eagle Protection Act (16 U.S.C. 668 *et. seq.*), Endangered Species Act (16 U.S.C. 1531 *et. seq.* or any provision of part 4700 of this title concerning the protection and management of wild free-roaming horses and burros: or

(3) violation of State live-stock laws or regulations relating to the branding of livestock: breed, grade, and number of bulls; health and sanitation requirements, and violating State, county, or local laws regarding the stray of livestock from permitted public land grazing areas onto areas that have been formally closed to open range grazing.

#### *Subpart 4150-Unauthorized Grazing Use*

*See. 4150.1 Violations.*

*Violation of Sec. 4140.1 (b)(1) constitutes unauthorized grazing use.*

*(a) The authorized officer shall determine whether a violation is nonwillful, willful, or repeated willful.*

*(b) Violators shall be liable in damages to the United States for the forage consumed by their livestock, for injury to Federal property caused by their unauthorized grazing use, and for expenses incurred in impoundment and disposal of their livestock, and may be subject to civil penalties or criminal sanction for such unlawful acts.*

*Sec. 4150.2 Notice and order to remove.*

*(a) Whenever it appears that a violation exists and the owner of the unauthorized livestock is known, written notice of unauthorized use and order to remove livestock by a specified date shall be served upon the alleged violator or the agent of record, or both, by certified mail or personal delivery. The written notice shall also allow a specified time from receipt of notice for the alleged violator to show that there has been no violation or to make settlement under Sec. 4150.3.*

*(b) Whenever a violation has been determined to be nonwillful and incidental, the authorized officer shall notify the alleged violator that the violation must be corrected, and how it can be settled, based upon the discretion of the authorized officer.*

*(c) When neither the owner of the unauthorized livestock nor his agent is known, the authorized officer may proceed to impound the livestock under Sec. 4150.4.*

*(d) The authorized officer may temporarily close areas to grazing by specified kinds or class of livestock for a period not to exceed 12 months when necessary to abate unauthorized grazing use. Such notices of closure may be issued as final decisions effective upon issuance or on the date specified in the decision and shall remain in effect pending the decision on appeal unless a stay is granted by the Office of Hearings and Appeals in accordance with 43 CFR 4.21.*

*Sec. 4150.3 Settlement.*

*The amount due for settlement shall include the value of forage consumed as determined in accordance with paragraph (a), (b), or (c) of this section. Where violations are repeated willful, the authorized officer shall take action under Sec. 4170.1-1 (b) of this title. The amount due for all settlements shall include the value of forage consumed as determined by paragraph (a), (b), or (c) of this section. Settlement for willful and repeated willful violations shall also include the full value for all damages to the public lands and other property of the United States; and oil reasonable expenses incurred by the United States in detecting, investigating, resolving violations, and livestock impoundment costs.*

*(a) For nonwillful violations: The value of forage consumed as determined by the average monthly rate per AUM for pasturing livestock on privately owned land (excluding irrigated land) in each State as published annually by the Department of Agriculture. The authorized officer may approve nonmonetary settlement of unauthorized use only when the authorized officer determines that each of the following conditions is satisfied:*

*(1) evidence shows that the unauthorized use occurred through no fault of the livestock operator;*

*(2) the forage use is insignificant;*

*(3) the public lands have not been damaged: and*

*(4) nonmonetary settlement is in the best interest of the United States.*

*(b) For willful violations: Twice the value of forage consumed as determined in paragraph (a) of this section.*

*(c) For repeated willful violations: Three times the value of the forage consumed as determined in paragraph (a) of this section.*

*(d) Payment made under this section does not relieve the alleged violator of any criminal liability under Federal or State law.*

*(e) Violators shall not be authorized to make grazing use on the public lands administered by the Bureau of Land Management until any amount found to be due the United States under this section has been paid. The authorized officer may take action under Sec. 4180. 1-2 of this title to cancel or suspend-grazing authorizations or to deny approval of applications for grazing use until such amounts have been paid. The proposed decision shall include a demand for payment.*

#### *Sec. 4150.4 Impoundment and disposal.*

*Unauthorized livestock remaining on the public lands or other lands under Bureau of Land Management control, or both, after the date set forth in the notice and order to remove sent under Sec. 4150.2 may be impounded and disposed of by the authorized officer as provided herein.*

##### *Sec. 4150.4-1 Notice of intent to impound.*

*(a) A written notice of intent to impound shall be sent by certified mail or personally delivered to the owner or his agent, or both. The written notice shall indicate that unauthorized livestock on the specified public lands or other lands under Bureau of Land Management control, or both, may be impounded any time after 5 days from delivery of the notice.*

*(b) Where the owner and his agent are unknown, or where both a known owner and his agent refuses to accept delivery, a notice of intent to impound shall be published in a local newspaper and posted at the county courthouse and a post office near the public land involved. The notice shall indicate that unauthorized livestock on the specified public lands or other lands under, Bureau of Land Management control, or both, may be impounded any time after 5 days from publishing and posting the notice.*

##### *Sec. 4150.4-2 Impoundment.*

*After 5 days from delivery of the notice under Sec. 4150.4-1 (a) of this title or any time after 5 days from publishing and posting the notice under Sec. 4150.4-1 (b) of this title, unauthorized livestock may be impounded without further notice any time within the 12-month period following the effective date of the notice.*

##### *Sec. 4150.4-3 Notice of public sale.*

*Following the impoundment of livestock under this subpart the livestock may be disposed of by the authorized officer under these regulations or, if a suitable agreement is in effect, they may be turned over to the State for disposal. Any known owners or agents, or both, shall be notified in writing by certified mail or by personal delivery of the sale and the procedure by which the impounded livestock may be redeemed prior to the sale.*

##### *Sec. 4150.4-4 Redemption.*

*Any owner or his agent, or both, or lien-holder of record of the impounded livestock may redeem them under these regulations or, if a suitable agreement is in effect, in accordance with State law, prior to the time of sale upon settlement with the United States under Sec. 4150.3 or adequate showing that there has been no violation.*

#### *Sec. 4150.4-5 Sale.*

*If the livestock are not redeemed on or before the date and time fixed for their sale, they shall be offered at public sale to the highest bidder by the authorized officer under these regulations or, if a suitable agreement is in effect, by the State. If a satisfactory bid is not received, the livestock may be reoffered for sale, condemned and destroyed or otherwise disposed of under these regulations, or if a suitable agreement is in effect, in accordance with State Law.*

#### *Subpart 4160-Administrative Remedies*

##### *Sec. 4160.1 Proposed decisions.*

*(a) Proposed decisions shall be served on any affected applicant, permittee or lessee, and any agent and lien holder of record, who is affected by the proposed actions, terms or conditions, or modifications relating to applications, permits and agreements (including range improvement permits) or losses, by certified mail or personal delivery. Copies of proposed decisions shall also be sent to the interested public.*

*(b) Proposed decisions shall state the reasons for the action and shall reference the pertinent terms, conditions and the provisions of applicable regulations. As appropriate, decisions shall state the alleged violations of specific terms and conditions and provisions of these regulations alleged to have been violated, and shall state the amount due under §§ 4130.8 and 4150.3 and the action to be taken under § 4170.1.*

*(c) The authorized officer may elect not to issue a proposed decision prior to a final decision where the authorized officer has made a determination in accordance with § 4110.3-3(b) or § 4150.2(d) of this part.*

##### *Sec. 4160.2 Protests.*

*Any applicant, permittee, lessee or other affected interests may protest the proposed decision under Sec. 4160.1 of this title in person or in writing to the authorized officer within 15 days after receipt of such decision.*

##### *Sec. 4160.3 Final decisions.*

*(a) In the absence of a protest, the proposed decision will become the final decision of the authorized officer without further notice unless otherwise provided in the proposed decision.*

*(b) Upon the timely filing of a protest, the authorized officer shall reconsider his proposed decision in light of the protestant's statement of reasons for protest and in light of other information pertinent to the case. At the conclusion to his review of the protest the authorized officer shall serve his final decision on the protestant or his agent, or both, and the interested public.*

*(c) A period at 30 days following receipt of the final decision, or 30 days after the date the proposed decision becomes final as provided in paragraph (a) of this section, is provided for filing an appeal and petition for stay of the decision pending final determination an appeal. A decision will not be effective during the 30-day appeal period, except as provided in paragraph (f) of this section. See §§ 4.21 and 4.470 of this title for general provisions of the appeal and stay process.*

*(d) When the Office of Hearings and Appeals stays a final decision of the authorized officer regarding an application for grazing authorization. an applicant who was granted grazing use in the preceding year may continue at that level of authorized grazing use during the time the decision is stayed. except where grazing use in the preceding year was authorized on a temporary basis under §§ 4110.3-1 (a). Where an applicant had no authorized grazing use during the previous year, or the application is for designated ephemeral or annual rangeland grazing use, the authorized grazing use shall be consistent with the decision pending the Office of Hearings and Appeals final determination on the appeal.*

*(a) When the Office of Hearings and Appeals stays a final decision of the authorized officer to change the authorized grazing use, the grazing use authorized to the permittee or losses during the time that the decision is stayed shall not exceed the permittee's or lessee's authorized use in the last year during which any use was authorized.*

*(f) Notwithstanding the provisions of § 4.21 (a) of this title. the authorized officer may provide that the final decision shall be effective upon issuance or on a date established in the decision and shall remain in effect pending the decision on appeal unless a stay is granted by the Office of Hearings and Appeals when the authorized officer has made a determination in accordance with § 4110.3-3(b) or § 4150.2(d) of this part. Nothing in this section shall affect the authority of the Director of the Office of Hearings and Appeals or the Interior Board of Land Appeals to place decisions in full force and affect as provided in § 4.21 (a)(1) of this title.*

#### *Sec. 4160.4 Appeals.*

*Any person whose interest is adversely affected by a final decision of the authorized officer may appeal the decision for the purpose of a hearing before an administrative law judge by following the requirements set out in § 4.470 of this title. As stated in that part. the decision must be filed within 30 days after the receipt of the decision or within 30 days after the date the proposed decision becomes final as provided in 4160.3(a). Appeals and petitions for a stay of the decision shall be filed at the office of the authorized officer. The authorized Officer shall promptly transmit the appeal and petition for stay to ensure their timely arrival at the appropriate Office of Hearings and Appeals.*

#### *Subpart 4170-Penalties*

##### *See. 4170.1 Civil penalties.*

##### *Sec. 4170. 1 -1 Penalty for violations.*

*(a) The authorized officer may withhold issuance of a grazing permit or lease, or suspend the grazing use authorized under a grazing permit or lease, in whole or in part, or cancel a grazing permit or lease and grazing preference, or a free use grazing permit or other grazing*

*authorization. in whole or in part, under Subpart 4160 of this title, for violation by a permittee or lessee of any of the provisions of this part.*

*(b) The authorized officer shall suspend the grazing use authorized under a grazing permit, in whole or in part. or shall cancel a grazing permit or lease and grazing preference, in whole or in part. under Subpart 4160 of this title for repeated willful violation by a permittee or losses of Sec. 4140.1 (b)(1) of this title.*

*(c) Whenever a nonpermittee or nonlessee violates Sec. 4140.1(b) of this title and has not made satisfactory settlement under Sec. 4150.3 of this title the authorized officer shall refer the matter to proper authorities for appropriate legal action by the United States against the violator.*

*(d) Any person who is found to have violated the provisions of Sec. 4140.1 (a)(6) after August 21, 1995 , shall be required to pay twice the value of forage consumed as determined by the average monthly rate per AUM for pasturing livestock on privately owned land (excluding irrigated land) in each State as supplied annually by the National Agricultural Statistics Service, and all reasonable expenses incurred by the United States in detecting, investigating, and resolving violations. If the dollar equivalent value is not received by the authorized officer within 30 days of receipt of the final decision, the grazing permit or lease shall be cancelled. Such payment shall be in addition to any other penalties the authorized officer may impose under paragraph (a) of this section.*

#### *Sec. 4170. 1 -2 Failure to use.*

*If a permittee or lessee has, for 2 consecutive grazing fee years. failed to make substantial use as authorized in the lease or permit. or has failed to maintain or use water bass property in the grazing operation, the authorized officer, after consultation. coordination and cooperation with the permittee or losses and any lienholder of record, may cancel whatever amount of permitted use the permittee or lessee has failed to use .*

#### *Sec. 4170.2 Penal provisions.*

##### *Sec. 4170.2-1 Penal provisions under the Taylor Grazing Act.*

*Under section 2 of the Act any person who willfully commits an act prohibited under § 4140.1 (b), or who willfully violates approved special rules and regulations is punishable by a fine of not more than \$500*

##### *Sec. 4170.2-2 Penal provisions under the Federal Land Policy and Management Act.*

*Under section 303(a) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.), any person who knowingly and willfully commits an act prohibited under § 4140.1 (b) or who knowingly and willfully violates approved special rules and regulations may be brought before a designated U.S. magistrate and is punishable by a fine in accordance with the applicable provisions of Title 18 of the United States Code, or imprisonment for no more than 12 months or both.*

## *II. Riparian use standards for authorized grazing.*

The objective of the use standards would be to permit unimpeded succession of riparian plant communities and unimpeded functioning of riparian areas. Use would be monitored in a pasture every year until the recovery determination is completed (see below) and a determination is made that no further adjustments in grazing system are needed. Incidence of use on woody riparian species would be less than 25%. Monitoring procedures would include visits prior to and immediately following authorized use to establish the amount of use which is attributable to livestock. Stubble height prior to high river flows (pastures grazed during winter) would be at least four inches for wet colonizer and bank stabilizer herbaceous species. Stubble height would be at least six inches at the end of the grazing season for pastures grazed during the growing season. An evaluation of the cause of use standard exceedence (for example, drought, grazing season, animal number, trespass) would determine the appropriate management remedy (such as rest and change in authorized use season or number of livestock).

### III. Recovery standard for authorized grazing.

The objective of the recovery standard would be to verify that grazing authorized within the Wild and Scenic River boundaries is having no detectable impact on rates of vegetative community succession and channel development. Areas of use would be compared to areas of non-use. Only areas of similar ecological potential would be compared.

### **B. Monitoring**

Protocols for each step in the evaluation process have been established by BLM. For the implementation phase the documentation of activities such as fence or water trough construction would occur through the computerized 'Rangeland Improvement Project Systems' (RIPS) database. For the effectiveness phase of monitoring documentation would be achieved through a wide variety of monitoring techniques, including but not limited to random compliance checks of adherence to authorized grazing systems, rangeland health and watershed function assessments, water quality, vegetative attribute, recreational use, road density and maintenance, river flow and channel cross section monitoring. Additionally, on river Segments 2 and 3, an inventory of willow communities, first completed in 1981 and re-measured in 1995, would be completed on a 5-10 year basis. For the validation phase of monitoring, an interdisciplinary team would gather available information and evaluate resource conditions relative to site potential and changes which have occurred since management changes went into effect. An allotment evaluation (or similar document) would be prepared to provide the authorized officer the information needed to determine attainment, progress toward attainment or non-attainment of standards and allotment objectives. In the event of non-attainment, a determination of cause would be made and appropriate action will be taken as soon as practicable. In the case of non-attainment due to non-compliance on the part of the grazing operator (for example, trespass, failure to maintain facilities, or other violations of the grazing regulations or permit conditions/stipulations, such as the allotment management plan), appropriate action will be taken in accordance with 43 CFR 4150 and 4160.

The proposed monitoring and implementation schedule for grazing management is:



Allotment Evaluations	WSR Plan replaces Evaluation
Consult, Coordinate and Cooperate	WSR Plan replaces CCC
Decisions	WSR Plan replaces Decisions
Implement Management Actions	2003
Monitoring Intervals (in years) <sup>+</sup>	
Compliance	<b>1</b>
Riparian Vegetation	<b>2-3</b>
Upland Vegetation	<b>3-6</b>
Biological Soil Crusts	<b>3-6</b>
Other	<b>2-5</b>
Validation **	<b>2003</b>
Validation***	<b>5</b>

Monitoring is on-going throughout the John Day basin, at the date of a Record of Decision, a new monitoring frequency will be adopted for allotments which fall within the designated Wild and Scenic River segments.

\*\* For those allotments which require no on-the-ground changes (such as fences) as described in this plan.

\*\*\* For those allotments which require on-the-ground changes as described in this plan, validation will occur within 5 years of implementation in the Action Alternatives.

Activities would be started following issuance of the WSR plan decision record and completed by December 31 of the years shown. Some actions, such as adjustments to grazing leases where no on-the-ground structures are required, could be made immediately following the signing of the decision record. Other actions, such as fence construction, would take longer. The time required to complete title or easement acquisitions is beyond the control of the BLM. The assumptions were made that funding would continue similar to current levels and that the decision record would be issued before December 31, 2000.

Monitoring techniques would be quantitative, where possible. Where quantitative techniques are inappropriate or unavailable, qualitative techniques would be used. Monitoring techniques would be appropriate to land form. For example, techniques would differ between upland and riparian vegetation, between South Fork and mainstem channel form. Monitoring would include at least soil cover, plant species composition, bank stability, microbiotic crusts, and may include water quality or other physical and biological attributes or processes. Monitoring studies would be installed within one year of the Record of Decision on winter-grazed pastures, and within two years of the Record of Decision on spring-grazed pastures. Scattered tracts of public lands as defined in the Interagency Implementation Team implementation monitoring guidance, and which are exempt from reporting under that guidance would also be exempt from this standard.

Mid-term determinations of the similarity of the changes between use and non-use areas would be made at Years 3 and 7 for winter pastures, and during Years 5 and 6 for spring-grazed pastures. If the standard is being met for winter grazed pastures during Year 3, the 2,000 cfs restriction would be lifted for those pastures. If the standard is not being met in Year 3, the 2,000 cfs restriction

would remain until the Year 7 determination and a solution would be pursued. The fallback solution would be to implement a spring rotation grazing system, one year on the riparian pasture, and one year off the riparian pasture. If the standard is being met in Year 7, the 2,000 cfs restriction would be lifted and the grazing system could be readjusted. If the standard is not being met in Year 7, the 2,000 cfs restriction would remain until year 10 and a solution would be pursued. The fallback solution would be the same as described above. For spring-grazed pastures, the 2,000 cfs restriction would remain in place indefinitely. Mid-term determinations for spring-grazed pastures would proceed as described for winter grazed pastures.

A final determination of the similarity of the changes between use and non-use areas would be made after a period of time sufficient to allow ecological processes to become expressed (10 years for winter pastures; and 11 to 15 years for spring grazed pastures, with the 4-year period allowing for the volume of work that is anticipated). In use areas demonstrating change that *is not* different from change found in non-use areas, the evaluation would find that the standard has been met and no adjustment in authorized grazing would be necessary. In use areas demonstrating change that is different (less desirable) from change in non-use areas, the evaluation would find that the standard has not been met. The evaluation would determine the probable cause of non-attainment. If non-attainment is due to livestock, use would be canceled in that portion of the pasture that did not meet the standard. For example, if riparian areas did not meet the standard and upland areas did meet the standard, a remedy similar to riparian exclusion would be implemented. In some cases, this would mean construction of water developments and fences; in other cases, this would mean canceling use in a pasture. If both riparian and upland areas did not meet the standard, a remedy similar to corridor exclusion would be implemented. This would require elimination of grazing within that portion of the pasture within the boundaries of the Wild and Scenic River.

*Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington.*

BLM guidance for implementation of Standards and Guidelines requires that all grazing allotments in the John Day River basin receive interdisciplinary team review by December, 2008, to determine if the Standards and Guidelines are being met. The BLM will take appropriate action (see CFR subparts 4110, 4120, 4130 and 4160), as soon as practicable but not later than the start of the next grazing year, upon determining that existing grazing management needs to be modified to ensure that the following conditions are met or significant progress is being made toward their attainment:

1. Upland soils exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate to soil, climate and landform.
2. Riparian-wetland areas are in properly functioning, physical condition appropriate to soil, climate and landform.
3. Healthy, productive and diverse plant and animal populations and communities appropriate to soil, climate and landform are supported by ecological processes of nutrient cycling, energy flow, and the hydrologic cycle.
4. Surface water and groundwater quality, influenced by agency actions, complies with State water quality standards.

5. Habitats support healthy, productive, and diverse populations and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate and landform.

Assessment of riparian conditions would follow BLM approved procedures (detailed in USDI-BLM, 1993 and USDI-BLM, 1998c; and Interpreting Indicators of Rangeland Health (USDI-BLM, 2000)). If after five years of implementation it is shown that non-compliance on the part of the grazing operator (for example, willful trespass, failure to maintain facilities, or other violations of the CFR) is a significant contributor to non-attainment, or lack of significant progress, livestock grazing authorization shall be discontinued for a period to be determined by the authorized officer.

### **C. Actions for Coverage**

**NMFS & USFWS:** The BLM is in the process of consulting on all grazing management throughout the John Day Basin at the current time. A total of 138 allotments are included in this consultation. All 'may effect' allotments within the Plan boundaries are included in that consultation process. The BLM has received a Concurrence Letter from NMFS on actions ongoing or proposed in 109 of those allotments. The remaining 29 allotments await a final Biological Opinion complete with Terms and Conditions, Reasonable and Prudent Alternatives and Incidental Take statements. Preliminary terms and conditions have been described in this document in various programs monitoring protocols. Consultation coverage on these allotments is valid for two years at which time consultation will be reinitiated on those actions. For that reason the BLM will not reinitiate consultation on grazing actions at this time. A subsequent BA that assess effects on these actions will be prepared within a year and resubmitted to NMFS for consultation. The BLM has also submitted BA's regarding grazing management in bull trout habitat in the basin. Therefore the BLM is not seeking any type of coverage for grazing actions with this consultation.

### **D. Summary of Effects and Effects Analysis**

Since coverage is not being sought for grazing actions through this document only a general analysis of grazing will be covered here. No determination on impacts will be made through this document and impacts analysis will defer to the Concurrence Letter and awaited Biological Opinion.

#### **Grazing Actions**

	Direct Impacts	Indirect Impacts
Affects on Steelhead	ND	ND
Affects on Critical Habitat	ND	ND
Affects on Bull Trout	ND	ND

Grazing strategies used in this segment are consistent with PACFISH, consistent with static or upward trend in riparian conditions, and consistent with strategies for specific habitat types. All allotments within these segments with respect to mainstem habitats are managed for the protection and enhancement of native steelhead populations and their habitat, and do not present the opportunity to negatively affect either steelhead populations or habitat within the mainstem

river. With respect to tributary streams to the mainstem corridor and the mainstem corridor, several allotments present a slight opportunity for direct impacts from grazing via redd trampling.

In a recent review of 1521 articles regarding riparian areas, Larsen *et al* (1998) noted that the literature contained “a great deal of personal opinion and commentary interspersed with little scientifically valid experimentation” and that “many of the opinion papers and nonexperimental reports were cited by others as science.” Of the literature reviewed, 428 related to livestock impacts. Of those 428, 260 contained data, 168 were classified as commentary. Of the 260 containing data, only 89 were experimental, 76 were case histories, 66 were observations and 29 were posters or abstracts. Of the experimental publications, only 31 were grazing studies.

Much of the research which has been done on livestock-riparian area relationships has focused on documenting the damage that livestock grazing can do. To that end, some experiments examined the effects of grazing compared to no grazing, while not describing some fundamentals of livestock management, such as grazing intensity or season of use. While that research is valuable for establishing that grazing can have negative effects, it has limited applicability for establishing the consequences of one grazing strategy over another.

There may be differences between the responses of riparian areas to various riparian-oriented grazing strategies. However, as yet, the ability of scientific methods to detect those differences has been confounded by the complexity of the interactions between the watershed, the riparian soils and vegetation, the stream channel and the grazing animal. When differences are detected, the results are often contradicting. For example, Clary *et al* (1996) reported greater willow density from spring grazing over no grazing on a ‘depleted’ sagebrush steppe riparian system (Pole Creek, Oregon) while Clary (1999) reported greater willow cover from no grazing over spring grazing on a mountain meadow ecosystem (Stanley Creek, Idaho). Kauffman *et al* (1983a) found greater streambank erosion with late season grazing over no grazing and little over-winter erosion on Catherine Creek while Buckhouse *et al* (1981) found no differences between treatment (no grazing, deferred rotation, rest rotation and season long grazing) and large over-winter erosion on Meadow Creek. Many studies found there to be few if any differences between any treatments (Bryant and Skovlin, 1982; Buckhouse and Gifford, 1976; Green and Kauffman, 1995; Kauffman *et al*, 1983b; Kondolf, 1993; Sedgwick and Knopf, 1991; Siekert *et al*, 1985).

The conclusion that few differences exist in riparian area responses to various riparian-oriented grazing strategies (such as exclusion and spring grazing) is supported by the results of monitoring on the John Day River. The nature of the response to no use is very similar to the response to riparian-oriented management. Some areas do not respond to changes in management. For example a riparian area within an exclusion fence, built sometime in the 1950s, that still has sparse riparian vegetation. This is not the result of use by livestock but a reflection of the site potential. The paired inventories of willow communities in Segments 2 and 3 showed an increase from 0.0 miles to 15.56 miles of willow communities along the John Day River between 1981 and 1995 (USDI BLM, 1996a). This increase in vegetation is the result of cooperative efforts by private landowners, tribes, and local, state and federal government to restore riparian communities using a variety of livestock management and watershed improvement techniques. It should be noted,

however, that much of the riverbank is not capable of supporting willow communities due to soil and substrate considerations and management could never result in the successful introduction of willows.

Another conclusion consistent in the literature is that unmanaged hot season or season long grazing will either slow recovery of riparian areas over no grazing or contribute to degradation (Bohn and Buckhouse, 1985; Clary *et al*, 1996; Hubert *et al*, 1985; Knapp and Matthews, 1996; Myers and Swanson, 1995; Sarr *et al*, 1996).

The literature cited above and photo monitoring of sites along the John Day River indicate that restoration of desirable, properly functioning riparian conditions along the John Day River can occur as fast and as completely with riparian-oriented grazing management as it would be with complete exclusion of livestock. This would be true for a river or stream system which is in balance with its sediment load. The John Day River is not in balance with its sediment load, the river has down cut, portions of the river have aggraded and are going through the process of re-establishing a floodplain (that is, in many areas it is laterally unstable). Future condition of the river will be driven more by natural geomorphological processes of moving and stabilizing the sediment load than by differences in grazing strategy.

In areas where nonriparian-oriented grazing strategies (such as season long grazing) are replaced by riparian-oriented grazing strategies (such as spring grazing), the riparian vegetation is likely to show an immediate response (as the vegetation is released from grazing pressure) and then slowly change, increasing in density, breadth and diversity (as successional and geomorphological processes proceed). At least part of the response and subsequent change will depend on variables beyond the control of the manager, such as the site type (for example, whether a given site is basalt cliff or alluvial fan), the vegetation on the site when the management change occurred, height of groundwater table, the subsequent climate and variations in river flows (Benda *et al*, 1999; Elmore and Kauffman, 1994; Platts, 1991). Large hydrological events, such as ice flows or floods, and prolonged drought influence the nature and direction of the response of vegetation to changes in grazing and, at times, actually reverses changes.

An important finding by many researchers is that there is a linkage between the vegetative community of a stream segment and associated upstream or upland areas, and that restoration efforts need to focus on a watershed perspective rather than a stream segment perspective (Duff, 1977; Hubert *et al*, 1985; Rinne, 1985; Kondolf, 1993).

### **Consequences of specific strategies**

Some general information is available regarding impacts of different grazing strategies on riparian areas. However, after investigating grazing management strategies and techniques practiced on healthy riparian streams in Montana, Ehrhart and Hansen (1997) found that operator involvement was the magic bullet. "We concluded ... that riparian grazing might be incorporated into each of the traditional grazing systems - except season-long - *as long as the condition of the riparian zone itself remains of primary concern* (emphasis original). Management, not the system, is the key."

In reviewing impacts of various grazing strategies it has been noted that the most important aspect of an strategy, operator involvement and commitment to riparian recovery, is likely to vary amongst operators. As a consequence the level of riparian recovery has varied. Duff's study (1977) supports this by noting that "Positive habitat response achieved from 4 years of rest had been negated by six weeks intense livestock grazing" after a riparian exclosure fence was cut. Implementation of an 'appropriate' strategy without constant attention is bound to fail, whether the strategy is exclusion, total rest, or maximized use.

General information is presented below explaining probable results of grazing strategies or techniques commonly used within the John Day Basin. The information presented below (except where otherwise noted) is paraphrased from several documents which summarize experiments, observations and opinions regarding grazing in riparian areas, including Ehrhart and Hansen (1997), Elmore and Kauffman (1994), and Platts (1991).

**Season of Use.** One of the first steps to developing a riparian-oriented grazing system is determination of appropriate grazing seasons. Primary considerations include livestock behavior, response of plant communities and the degree of soil moisture on the site. Seasons are defined by growth stages in the annual growth cycle of native bunchgrasses. Early season runs from the beginning of growth in the spring to flowering. This corresponds to the period of highest river flow levels. Hot season runs from development of seeds to seed set and drying of vegetation. This corresponds to the period of quickly dropping river flow levels, during which the river ceases to act as an effective barrier to livestock movement. Late season runs from completion of annual life cycle, through the on set of fall rains, the development of next year's tillers and re-initiated photosynthesis. This corresponds with the lowest river flow levels and the gradual increase in flow associated with autumn. Dormant season runs from the drop in soil temperatures, which slows and eventually stops plant growth, to the increase in soil temperatures which allows plants to begin active growth. This corresponds to the period of rising river levels and ice flows.

**Early Season (Spring) Use.** Livestock are attracted to uplands by succulent upland vegetation while cool temperatures discourage cattle from loitering in the riparian zones. Much of the John Day River riparian zone is covered by water, so many of the riparian plants are ungrazed with early season use. Those plants that are available to livestock usually have sufficient soil moisture for regrowth following defoliation. Reduced grazing pressure on trees and shrubs is a typical result of early season use. Impacts on soil and banks depend on soil texture and soil moisture content. Much of the John Day River has riparian soils that are cobbly or sandy and are well drained. The opportunity for compaction and bank damage is limited on these soils.

**Hot Season (Summer) Use.** Livestock tend to remain in the riparian area due to high temperatures and low relative palatability of vegetation in the uplands. As waters recede, barriers to livestock movement (such as deep, flowing water, steep slopes or cliffs) can be circumvented, neutralizing the effect of pasture or allotment boundaries. Following defoliation there is less moisture available for regrowth and replenishment of carbohydrate reserves. Browse species (for example, willow and cottonwood) tend to become more preferred as herbaceous vegetation dries out or loses nutritional value. Hot season use, following the critical growing season of upland vegetation, may meet plant growth requirements if the intensity of management can be increased, such as regular herding, short grazing periods, or close monitoring of utilization

levels. Soils are typically more stable at this time of year, so compaction and trampling is less of a problem if long periods of use are avoided.

**Late Season (Fall) Use.** Due to the palatability differences between dried upland vegetation and riparian shrubs and forbs, cattle will not be attracted to uplands unless cooler weather is accompanied by precipitation which stimulates cool season grass growth. As long as palatable herbaceous forage and offstream water is available and cool air pockets discourage livestock from loitering in lowlands, willow use should remain low. In the absence of precipitation, the relatively high protein content of shrubs and trees makes them attractive to livestock. For this reason, regular late season use on the John Day should be accompanied with close surveillance. While, young willow are particularly vulnerable to damage during late season grazing, mature stands of willow should not be affected. Herbaceous vegetation have completed their growth cycles and grazing should not affect plant development. If heavily grazed, the silt trapping properties of vegetation may be compromised (though the importance of this is under dispute, see Skinner 1998). Soils are usually dry and the probability of compaction and bank trampling is low.

**Dormant Season (Winter) Use.** When bottoms are colder than surrounding uplands, especially where south facing slopes are present, winter grazing can be an effective way to limit the time spent by livestock in riparian zones. Supplemental feeding well away from streams and offstream water developments will increase the effectiveness of winter grazing. Harsh winter storms, however, could encourage livestock to seek cover in riparian zones, allowing for rubbing and trampling damage. Herbaceous vegetation have no exposed growing points, so defoliation does little or no damage. Plants that are used have the entire growing season to recuperate. Grazing when soils are frozen is an advantage on finely textured soils, however, in the John Day basin, few soils are finely textured and the majority of the winter is spent above the freezing level.

**Season Long Use.** Grazing throughout the growing season, livestock tend to congregate and loiter in riparian zones. Riparian zones provide convenient forage, water and cover for livestock. Overuse of riparian zones is possible even with low stocking rates. The availability of water allows for continuous regrowth throughout the grazing season and plants often are grazed numerous times in one year. If grazed heavily enough, carbohydrate reserves needed for dormant season respiration can become depleted and plants can lose vigor or die. Trampling damage, soil compaction and accelerated streambank erosion are likely.

**Rotation Grazing.** Rotation grazing systems were designed to meet the growth requirements of upland vegetation while allowing grazing to occur during periods when plants were sensitive to defoliation (Hormay, 1970). As long as the physiological needs of riparian species are known and taken into account, rotation grazing systems can be used to restore degraded riparian areas. Effects of grazing under a rotation system will mirror the effects described above for various seasons. The difference is that the effects will change from year to year depending on whether livestock are present in the spring, summer, fall or winter. Also, rotation systems often include periods of non-use for more than one calendar year. Rotation schedules vary in the number of pastures which are included in the rotation as well as the seasons which are included. Because of the variety of combinations available, effects on the riparian zone cannot be predicted without more information on the rotation system.

**Livestock Distribution.** Discouraging livestock from loitering in riparian zones is accomplished with a variety of techniques in addition to season of use. Offstream water has been shown to reduce the time cattle spend in riparian zones by as much as 90%. Other strategies include placing salt or mineral blocks over 1/4 mile from the target riparian zone; improving upland vegetation through proper management, burning or seeding; regular herding; selective culling of animals which linger in riparian zones; turning animals into a pasture at a gate far removed from the target riparian area; drift fences which prevent livestock from using the river as a travel corridor; and corridor fencing.

**Livestock Exclusion.** Livestock exclusion from a target riparian area can be achieved through construction of a fence which parallels the banks of the river, called a corridor. This strategy eliminates flexibility in the decision of whether to develop offstream water. With the riparian zone no longer accessible to livestock, alternative water sources must be developed. However, this strategy eliminates the impacts of livestock on soils and vegetation in and nearby the target riparian zone and allows the operator more flexibility when deciding how to graze the upland vegetation. With corridor fencing the uplands could, if grazed improperly, contribute to increased overland flow resulting in sediment loading of the water and riparian zone. Livestock impacts could be further reduced by elimination of grazing from an entire watershed.

The effectiveness of corridor fences determines the degree to which livestock continue to affect riparian resources once the project is implemented. Fences must be constructed so damage by floods is minimized and so the general public doesn't neutralize the effort through cutting fences or leaving open gates. Coordination with other land owners is also essential in determining corridor fence effectiveness. At low water, a neighbor's livestock can cross the river and graze a riparian zone otherwise excluded. Even on the same side of the river, if one neighbor's riparian zone is fenced and the other is not, fences leading down into the water on the land ownership boundary must be put up and taken down with variations in river flow levels. Otherwise, fences will be washed out by high water and a hole will allow livestock to penetrate at low water. Constructing corridor fences over large sections of the river would require coordination among several land owners. Means for achieving cooperation could include interagency incentive programs and purchase of easements.

Continuing existing grazing management on allotments would maintain existing trends in riparian production and density and diversity of riparian plants. Riparian areas with riparian oriented strategies would either maintain existing condition or increase in vegetation density and diversity. In addition 20.9 miles of riparian area (public and private) would have increased diversity and density in riparian vegetation where site conditions are suitable as a result of a change in grazing management to one that: utilizes high water or exclusion fences to prevent access of livestock to a large portions of riparian vegetation, limits duration and intensity of grazing to a level that allows plants that are grazed to complete their growth cycle, and permits grazing during a period in which upland vegetation is accessible and provides a more desirable forage source for livestock than riparian vegetation. Where existing management would be continued current trends in vegetative condition would also continue.



## VII. Forestlands

### A. Proposed Actions and Program Description

Existing management within most of the mainstem John Day River corridor is consistent with PACFISH stipulations and is focused on protecting riparian areas for the benefit of water quality, soil stabilization, scenic values, fish and wildlife enhancement. Segments 7 and 10 below Izee Falls are segments within the planning area which contain timbered areas and designated critical habitat for steelhead.

Current John Day RMP standards and guidelines as amended by PACFISH for these areas in Segments 7 & 10 prohibit timber harvest in Riparian Habitat Conservation Areas (RHCA's) with two exceptions as taken from PACFISH described below:

- a) Where catastrophic events such as fire, flooding, volcanic, wind or insect damage result in degraded riparian conditions, allow salvage and fuelwood cutting in Riparian Habitat Conservation Areas only where present and future woody debris needs are met, where cutting wood would not retard or prevent attainment of other Riparian Management Objectives (RMO's) (*as defined in PACFISH*), and where adverse effects on listed anadromous fish can be avoided. For watersheds with listed salmon or designated critical habitat, complete Watershed Analysis prior to salvage cutting in RHCA's; or
- b) Apply silvicultural practices for RHCA's to acquire desired vegetation characteristics where needed to attain RMO's. Apply silvicultural practices in a manner that does not retard attainment of RMO's and that avoids adverse effects on listed anadromous fish.

Where RHCA's in these areas are defined by PACFISH as:

**Category 1** - Fish Bearing streams - RHCA's consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100 year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet, including both sides of the stream channel, whichever is greatest.

Other current BLM forest management guidelines related to riparian management are:

1. Timber removal may take place only when necessary to reduce the risk of catastrophic timber loss due to insect infestation, disease, or wildfire. New road construction within riparian areas should be avoided when possible.
2. Special harvest techniques (cable and/or aerial logging) are required when harvesting timber within riparians areas.
3. Skid trails should be located parallel to and outside of all drainages.

Outside of the riparian areas and within the corridor boundaries of Segments 7 and 10, forestland is managed as either commercial or non-commercial. Commercial forestlands are those lands capable of producing 20 cubic feet of commercially valuable wood (per acre) per year. In the John Day basin commercial tree species include pine, fir, spruce, Douglas fir, and larch. Current management for commercial forestland is for the production of timber. Outside of riparian buffer zones (RHCA's) timber is actively managed to prevent conditions that support insect and/or disease outbreaks. Management techniques include overstory removal and commercial and pre-commercial thinning.

Non-commercial forestlands do not have the viable species capable of producing 20 cubic feet of commercial grade wood. Primary vegetation management direction for non-commercial forestlands is to provide food and cover for wildlife and forage for cattle.

In order to attain the desired condition of both Segments 7 and 10, the existing John Day RMP (USDI-BLM, 1985a) guidelines as amended by PACFISH for the management of riparian areas would be applied to all areas within the river corridor. Timber removal would take place only when necessary to reduce the risk of catastrophic timber loss due to insect infestation, disease, or wildfire.

This means that the Category 1 RHCA definitions for fish bearing streams would be applied to areas in Segment 10 and 11 above anadromous fish distribution, effectively doubling the riparian buffer zones in these areas.

There are no current plans identified in this planning effort to harvest timber within the corridor areas. Any future harvest would be required to complete consultation before the activity would be implemented. At this point there will be no effects determination made with regard to timber harvest in the planning area.

## **B. Monitoring**

Monitoring of forest management actions will be done in accordance with the IIT guidance (USDA FS, USDI BLM 2000).

## **C. Actions for Coverage**

**NMFS:** The actions described in the Plan - extending PACFISH Category 1 buffer definition to areas above anadromous fish passage which are currently defined as Category 2 - do not meet the level of 'may effect' impacts which need to be analyzed by NMFS. The BLM is therefore not looking for any coverage on this decision.

**USFWS:** Actions with regard to this program do not overlap with any bull trout habitat areas; therefore the BLM is not requesting any coverage for these actions from USFWS.

## **D. Summary of Effects and Effects Analysis**

Forest Management Actions

	Direct Impacts	Indirect Impacts
Affects on Steelhead	NE	NE
Affects on Critical Habitat	NE	NE
Affects on Bull Trout	NE	NE

Extension of the Category 1 guidelines for RHCA's to areas currently managed as Category 2 RHCA's will effectively double the 'no-cut' buffer around streams within the corridor. This will have beneficial results for fish habitat and water quality downstream.

The effects of this actions will extend the Category 1 'no-cut' riparian boundaries to the remaining segments above Izee Falls, above designated critical habitat. Future management in these areas will abide by more stringent riparian 'no-cut' boundaries and further decrease impacts to downstream areas by leaving more of the riparian buffer intact.

**Rationale for Checklist Ratings of Effects for Population and Environmental Indicators for Forest Management within the John Day River Corridor including mainstem river and tributary areas as outlined in Chapter 2.**

**Water Temperature:** According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize downstream affects to this parameter.

**Sediment/Turbidity:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize downstream affects to this parameter.

**Chemical Contamination/Turbidity:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize downstream affects to this parameter.

**Physical Barriers:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will not affect this parameter.

**Substrate Embeddedness:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize downstream affects to this parameter.

**Large Wood:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will increase potential to meet desired levels of large wood downstream.

**Pool Frequency:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize affects to this parameter.

**Pool Quality:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize affects to this parameter.

**Off-Channel Habitat:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize affects to this parameter.

**Refugia:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize affects to this parameter.

**Wetted Width/Max Depth Ratio:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize affects to this parameter.

**Streambank Condition:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize affects to this parameter.

**Floodplain Connectivity:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize affects to this parameter.

**Changes in Peak/Base Flow:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize downstream affects to this parameter.

**Drainage Network Increase:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize affects to this parameter.

**Road Density and Location:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize affects to this parameter.

**Disturbance History:** Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize affects to this parameter.

**Riparian Reserves:** As described in the environmental baseline section, no assessment of riparian potential has occurred. Forest management in riparian areas, carried out according to stipulations, would not affect and tend to maintain this parameter.

Table 31. Checklist for documenting environmental base line and effects of proposed actions on relevant indicators for Segment 10 & 11 - South Fork and tributaries above Izee falls with regard to Forest Management.

<b><u>PATHWAYS:</u></b>	<b>ENVIRONMENTAL BASELINE</b>			<b>EFFECTS OF THE ACTION(S)</b>		
<b>INDICATORS</b>	<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>	<b>Restore</b>	<b>Maintain</b>	<b>Degrade</b>
<b><u>Water Quality:</u></b>			X		X+	
Temperature						
Sediment		X			X+	
Chem. Contam./Nut.		X			X+	
<b><u>Habitat Access:</u></b>	N/A				X	
Physical Barriers						
<b><u>Habitat Elements:</u></b>		X			X+	
Substrate						
Large Woody Debris			X		X+	
Pool Frequency			X		X+	
Pool Quality		X			X+	
Off-Channel Habitat		X			X+	
Refugia	N/A				X+	
<b><u>Channel Cond. &amp; Dyn:</u></b>		X			X+	
Width/Depth Ratio						
Streambank Cond.		X			X+	
Floodplain Connectivity	X				X+	
<b><u>Flow/Hydrology:</u></b>		X			X+	
Peak/Base Flows						
Drainage Network Increase		X			X+	
<b><u>Watershed Conditions:</u></b>		X			X+	
Road Dens. & Loc.						
Disturbance History	X				X+	
Riparian Reserves	N/A				X+	

\*\* In the maintain category X+ denotes effects which will maintain the indicator but which will have beneficial effects but not to the extent to restore the indicator, X- denotes effects which will maintain the indicator but which will have detrimental effects but not to the extent to degrade the indicator

**Answers to the Dichotomous Key For Making ESA Determination of Effects for Forest Management in the John Day River Corridor containing mainstem and tributary reaches as defined in Chapter 2.**

**1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?**

Yes Summer Steelhead

**2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?**

No, Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will further minimize downstream affects to the indicators.

**3. Does the proposed action(s) have the potential to result in “take” of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?**

No, Extension of the Category 1 RHCA stipulations to areas above designated critical habitat will not result in any take to listed species or cause destruction or adverse modification of designated critical habitat. **No Effect**

## **VIII. Agricultural Lands**

### **A. Proposed Actions and Program Description**

The BLM administered agricultural lands are now managed for a variety of purposes. These lands have associated water rights. Water rights associated with these public agricultural lands are restricted to a rate not to exceed 1/40 cfs per acre. Withdrawal from the river during the irrigation season (April 1 to September 30) is not to exceed 3 to 5 acre-feet per acre, depending on the specific water right associated with each property.

Segment 1 at approximately river mile (RM) 23, irrigated agriculture occurs on 8.7 acres of BLM-administered lands. This land is managed as part of an adjacent privately owned field. This field is located on the adjacent terrace, parallels approximately 1,650 feet of the John Day River, and is separated from the active flood plain by an access road. There are 0.22 cfs of water rights associated with this land.

Segment 2 contains about 278.5 acres of public lands with water rights parallel to approximately 2.5 miles of the John Day River. These lands are associated with or adjacent to private agricultural lands. Activities include leased commodity production, riparian tree and shrub propagation and restoration, wildlife food and cover weed control, and non-use. About half of the leased area is used for alfalfa hay, and the other for specialty seed crops such as carrot, onion, coriander, or beans.

Segment 3 contains approximately 97 acres of public lands with water rights. These lands are adjacent to approximately 0.75 miles of the John Day River. Ninety five acres are leased for production, generally alfalfa and oat hay. Two acres are utilized for production of cottonwood trees for restoration purposes. Twenty-six acres are scattered parcels incorporated into private agriculture lands and are separated from the river by private property. Approximately 71.5 acres are subject to BLM imposed irrigation restrictions that require terminating irrigation when John Day River flows drop below 390 cfs at the Service Creek Gauging Station.

The proposed decision for irrigation of all agriculture fields that are entirely publicly owned and managed by the BLM would be terminated on August 15 to protect adult steelhead immigration. On fields where the BLM is in the process of establishing perennial vegetation (which includes tree and shrub propagation, cottonwood galleries, and upland grasses and forbs), the August 15 termination date would not be implemented to aid in the establishment perennial vegetation.

Entirely publicly owned agriculture fields affected by the August 15 termination date include the following: 1) 182.4 acres of agriculture land currently leased for commodity production. This total does not include the 25.6 acres described below that are identified for disposal or the 8.7 acres in Segment 1 and the 3.4 acres in Segment 2 that would be excluded from this stipulation, as those acres are not identified for disposal and constitute a portion of a larger agriculture field that is privately owned and operated, and 2) 164.1 acres of BLM agriculture land that is currently not in commodity production.



Dispose of public parcels and associated water rights that constitute a portion of a larger agricultural field owned by a private party and which do not have reasonable access by public road or river. Such parcels would be disposed of through the land exchange process for lands of equal or greater value within the designated WSR boundary: Currently known parcels are in Segment 3 and include RM 112 (Clarno area); T8S, R19E, Section 4, SE/14 (15.3 acres) and RM 119; T8S, R19E, Section 25, NW1/4 (10.3 acres). Pending any exchange, these lands would continue to be leased.

Public land commodity production would be phased out. Emphasis would be placed on wildlife habitat enhancement. Activities would include tree and shrub propagation (such as cottonwood, willow, aspen), establishment of perennial vegetation (native and/or desirable non-native grasses, forbs, shrubs and trees) that does not require irrigation after establishment, and establishment of wildlife food and cover plots. Species selection would be made to benefit wildlife habitat and would require species able to compete with noxious weeds. This would be conducted in a phased approach over approximately 10 years, depending on funding. Opportunities to contract the implementation of this decision would be pursued.

The 164 acres of BLM agriculture lands with water rights that are currently not leased for commodity production would be: commit approximately 164 acres of public agricultural lands and associated water rights along the John Day River to non-commodity use, such as riparian vegetation propagation for restoration, wildlife habitat enhancement (e.g., food and cover plots, tree and shrub plantings), or conversion to perennial vegetation. The actual non-commodity use on each field would be determined by a number of factors which include but are not limited to noxious weed control efforts needed to prepare the field for non-commodity use, the ability of the site to support riparian vegetation to be used for restoration or propagation, and specific wildlife habitat enhancement projects to benefit certain species (i.e. shrub and tree plantings to benefit upland game birds and neotropical migratory birds). For water rights not being used for irrigation, beneficial use would be maintained by leasing or transferring those water rights instream with the OWRD. Where perennial vegetation is established, beneficial use would be maintained and water rights would be leased or transferred instream in cooperation with the OWRD. Any BLM managed land on which unauthorized agriculture is discovered in the future would be managed in a manner consistent with this decision.

The back log of rehabilitation efforts currently in process on BLM agricultural land requires a phase out on a scheduled sequence of leased agricultural lands to make rehabilitation of these lands feasible and avoid significant weed problems. The scheduled sequence and phase out of leased commercial agricultural land would be as follows:

Segment 1: River mile (RM23): Implement this decision by taking 8.7 acres out of commodity production and initiate rehabilitation within 5 years.

Segment 2: RM 98.75. Implement this decision by taking 3.4 acres out of commodity production and initiate rehabilitation within 5 years.

RM 101.5. Implement this decision by taking 43 acres out of commodity production and initiate rehabilitation within 8 years.

RM 107. Implement this decision by taking 70 acres out of commodity production and initiate rehabilitation within 5 years.

Segment 3: RM 136. Implement this decision by taking 23.4 acres out of commodity production and initiate rehabilitation within 10 years.

RM 137. Implement this decision by taking 46 acres out of commodity production and initiate rehabilitation within 10 years.

## **B. Monitoring**

All water BLM withdrawals will be monitored. This monitoring will entail actual flow gauges at each withdrawal point to measure the exact amount and quantity of water removed from the river.

## **C. Actions for Coverage**

**NMFS:** The BLM is seeking coverage of water usage on BLM agricultural lands and exchange of 25 acres of BLM agricultural lands with associated water rights. Potential water usage on 182.5 acres of BLM leased agricultural land that would be phased into native vegetation entails approximately 4.56 cfs. Water usage on the remaining 164 acres of BLM agricultural lands could potentially amount to 4.1 cfs; some of this water is used to irrigate the riparian hardwood nurseries at Clarno and Priest Hole. Most of these 164 acres do not have native vegetation established. Over the next 10 years water rights associated with these lands would be used to help establish native vegetation in these areas. For these reasons the BLM is seeking coverage of the full usage rate on all BLM management agricultural lands during the ten year phase out and native vegetation re-establishment period. This is a total of 8.66 cfs of water withdrawal.

**USFWS:** Actions within this program do not overlap with any bull trout habitat areas; therefore the BLM is not requesting any coverage of these actions from USFWS.

## D. Summary of Effects and Effects Analysis

### Agricultural Lands Management

	Direct Impacts	Indirect Impacts
Affects on Steelhead	NE	NE
Affects on Critical Habitat	NE	NLAA
Affects on Bull Trout	NE	NE

The primary effects of public land management is use of the associated water rights for each public land parcel. Public agricultural lands occur in Segments 1-3, and irrigation season is between April 1 and September 30. The stipulation to stop all public land water withdrawal after August 15 except for wildlife enhancement project area or cottonwood nursery areas, or areas where irrigation is critical to restoring native vegetation would remove any effect on migratory adult steelhead from water withdrawals on public land. Steelhead do not enter the basin until late August to early September. Stopping water withdrawals prior to steelhead presence would benefit migratory steelhead. Production of cottonwoods and other native hardwoods on BLM land for outplanting efforts would also benefit steelhead through improvement of riparian areas and fish habitat. Returning the remaining public land agricultural fields to natural vegetation or wildlife enhancement areas would return most of the BLM water rights to instream use thereby benefitting the steelhead and other aquatic life.

During the irrigation season and especially during the summer months the primary fishery of concern is the smallmouth bass fishery. Colder water species such as salmonids are not present in segments 1-3 during these times of year (Segments 1-3 function primarily as a migration corridor in early spring and fall). Agricultural leases and their associated water rights have the result of removing water from instream, thereby decreasing the amount of habitat available for fish and other aquatic life. See discussion of water quantity effects on fish habitat.

The critical low flow months are August and September when average flows at McDonald Ferry (80% exceedence) are 246 cfs and 194 cfs respectively. Total consumptive use and storage in the basin are 192.6 and 128.5 cfs respectively. The water rights held by the BLM represent approximately 5% and 7.5% respectively in August and September of the 80% exceedence flows in the river.

Within each segment (1-3) there are associated lands and water rights that are currently leased for commodity production and which would be phased out over the next ten years.

Segment 1 - 8.7 acres phased out over 5 years, 0.2175 cfs

Segment 2 - 3.4 acres phased out over 5 years, 0.85 cfs

43 acres phased out over 8 years, 1.075 cfs

70 acres phased out over 5 years, 1.75 cfs

Segment 3 - 23.4 acres phased out over 10 years, 0.585 cfs

46 acres phased out over ten years, 1.15 cfs

All non-leased lands would be returned to native vegetation with the exception of wildlife food and cover areas and native hardwood nurseries over the next 10 years.

Exchange of 25 acres would maintain existing uses and because these lands are distant from the river bank uses would not impact conditions upon which fish depend.

Exchange of approximately 25 acres would reduce BLM water rights by approximately 0.625 cfs. This would reduce BLM water rights to approximately 9.0 cfs. Slightly more than half of BLM agricultural fields are leased for commodity production (182.4 acres) the rest are not currently in commodity production (164.1 acres) or are part of a larger privately owned field (12.1 acres). Therefore maximum theoretical water withdrawal for BLM commodity producing agricultural fields is 4.56 cfs, only approximately half of this is needed to produce alfalfa - the most water intensive crop grown on these fields - leaving approximately 2.28 cfs withdrawn from the river for irrigation. This accounts for approximately 0.9% of flow in August.

In proposed decision for a public lands irrigation shutoff date of August 15 would ensure that a maximum additional 4.875 cfs would remain in the river after this date. During some years the steelhead are known to enter the basin as early as mid-August. This would increase the probability that early steelhead could successfully negotiate the lower reaches of the river.

The result of the decision is likely to reduce the introduction of pollutants into the river because, with the elimination of commodity production, there would be a lower rate of application of fertilizers with less cultivation and reduced introduction of sediment than at present. With reduced withdrawal of water from the river more habitat would be available to fish. Increasing the water in the river coupled with a lower rate of introduction of pollutants would reduce the concentration of these elements in the river. Fish habitat would improve as water quantity and quality relate to fish habitat. This would be a phased approach to restoration of agricultural fields that would extend over approximately 15 years. Long-term effects would return a greater proportion on water rights to instream uses, which could be leased or transferred to the Water Resources Department and held instream. A small portion of water would be maintained for irrigation to continue riparian and wildlife enhancement projects. Long term, the amount of water left instream would increase slightly, which would have an imperceptible effect on smallmouth bass during the summer months.

**Rationale for Checklist Ratings of Effects for Population and Environmental Indicators for Agricultural Lands Management within the John Day River Corridor including mainstem river and tributary areas as outlined in Chapter 2.**

**Water Temperature:** According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Long term commitment of BLM water rights to instream uses will benefit this indicator, short term use will not affect steelhead since they are not present in the river in these areas during irrigation season.

**Sediment/Turbidity:** Long term commitment of BLM water rights to instream uses and a phase out of commodity agricultural use will benefit this indicator.

**Chemical Contamination/Turbidity:** Long term commitment of BLM water rights to instream uses and a phase out of commodity agricultural use will benefit this indicator through termination of use of agricultural pesticide and herbicide use. Short term use will not affect steelhead since they are not present in the river in these areas during irrigation season.

**Physical Barriers:** Agricultural Lands Management will not cause physical barriers to steelhead.

**Substrate Embeddedness:** Long term commitment of BLM water rights to instream uses and a phase out of commodity agricultural use will benefit this indicator by decreasing sediment input from agricultural practices into stream areas.

**Large Wood:** Agricultural Lands Management will not affect large wood presence.

**Pool Frequency:** Agricultural Lands Management is not expected to change pool frequency.

**Pool Quality:** Agricultural Lands Management is not expected to change pool frequency.

**Off-Channel Habitat:** Off channel habitat should not be affected by agricultural lands management..

**Refugia:** Agricultural lands management should not affect spawning, rearing, and migratory habitat for steelhead and chinook.

**Wetted Width/Max Depth Ratio:** Agricultural Lands Management is not expected to change width to depth ratios.

**Streambank Condition:** Long term commitment of BLM water rights to instream uses, a phase out of commodity agricultural and production of native hardwoods for outplanting use will benefit this indicator through re-establishment of native vegetation and widening of the riparian area.

**Floodplain Connectivity:** Long term commitment of BLM water rights to instream uses, a phase out of commodity agricultural and production of native hardwoods for outplanting use will benefit this indicator through re-establishment of native vegetation in floodplain and terrace areas, proper hydrologic function will be restored over time in many areas.

**Changes in Peak/Base Flow:** Long term commitment of BLM water rights to instream uses, a phase out of commodity agricultural and production of native hardwoods for outplanting use will benefit this indicator through water rights committed to instream use.

**Drainage Network Increase:** Agricultural lands management will not effect the drainage network.

**Road Density and Location:** Agricultural lands management will not effect road density or location.

**Disturbance History:** Disturbance history will not be effected by agricultural lands management.

**Riparian Reserves:** As described in the environmental baseline section, no assessment of riparian potential has occurred.

Table 32. Checklist for documenting environmental base line and effects of proposed actions on relevant indicators for Segments 1,2,3,4 mainstem river with regard to Agricultural Lands Management.

<b><u>PATHWAYS:</u></b>	<b>ENVIRONMENTAL BASELINE</b>			<b>EFFECTS OF THE ACTION(S)</b>		
<b>INDICATORS</b>	<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>	<b>Restore</b>	<b>Maintain</b>	<b>Degrade</b>
<b><u>Water Quality:</u></b>		X			X+	
Temperature						
Sediment		X			X+	
Chem. Contam./Nut.	X				X+	
<b><u>Habitat Access:</u></b>	X				X	
Physical Barriers						
<b><u>Habitat Elements:</u></b>	N/A				X+	
Substrate						
Large Woody Debris	N/A				X	
Pool Frequency	X				X	
Pool Quality	X				X	
Off-Channel Habitat	N/A				X	
Refugia	N/A				X	
<b><u>Channel Cond. &amp; Dyn:</u></b>	X				X	
Width/Depth Ratio						
Streambank Cond.		X			X+	
Floodplain Connectivity		X			X+	
<b><u>Flow/Hydrology:</u></b>		X			X+	
Peak/Base Flows						
Drainage Network Increase	X				X	
<b><u>Watershed Conditions:</u></b>		X			X	
Road Dens. & Loc.						
Disturbance History	N/A				X	
Riparian Reserves	N/A				X	

\*\* In the maintain category X+ denotes effects which will maintain the indicator but which will have beneficial effects but not to the extent to restore the indicator, X- denotes effects which will maintain the indicator but which will have detrimental effects but not to the extent to degrade the indicator

### **Answers to the Dichotomous Key For Making ESA Determination of Effects for Agricultural Lands Management in the John Day River Corridor containing mainstem and tributary reaches as defined in Chapter 2.**

**1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?**

Yes Summer Steelhead

**2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?**

No, agricultural land management strategies and applications were designed to attain or protect the relevant properly functioning indicators.

**3. Does the proposed action(s) have the potential to result in “take” of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?**

The phased out of commodity production on public land agricultural fields, the production of native hardwoods or wildlife enhancement projects and the allocation of most BLM water rights within the corridor to instream uses will not result in ‘take’ of listed anadromous salmonids or destruction/adverse modification of habitat. The exchange of 25 acres of BLM agricultural lands will also not result in ‘take’ of listed anadromous salmonids or destruction/adverse modification of habitat. The result of these management decision will be beneficial effects of phasing out commodity agriculture and re-establishing native vegetation in these areas, and committing water use to instream purposes. **Not Likely to Adversely Affect**



## **IX. Recreation Management**

### **A. Proposed Action and Program Description**

#### **1. Boating Use Levels**

Under existing policy, the BLM would establish appropriate carrying capacity, using the principle of Limits of Acceptable Change (LAC), in all areas where visitor use has the potential to adversely impact significant resource values and/or the quality of visitor experience.

During the three-year period following the Record of Decision, appropriate use levels would be estimated for Segments 2 and 3. Interim daily launch targets would be set based on these estimates. In Segment 1, use levels would be evaluated annually to determine if launch targets are necessary. The effects of day use on river resources and social conditions would be evaluated as part of the LAC study to determine the need for future limits or use restrictions. In managing recreation use, including boating, it is the BLM's policy to begin with the least restrictive management prescriptions that would accomplish the objective and move toward more restrictive measures as needed. Through a variety of non-permit measures, the boating public would be asked to voluntarily launch during off-peak periods to maintain use levels at or below the interim daily launch targets. Launch targets proposed for interim management period are limited to launches for overnight trips. Launch limits proposed on the basis of the findings of the LAC study may involve limits on day use. Actions that could be employed to manage use levels include letters to users and the media encouraging off-peak use, required no impact camping, equipment restrictions, party size limits, a campsite reservation system, and use fees. During this time, on-the-ground management actions would be taken to protect resources as soon as a need was identified.

The BLM would set interim daily launch targets based on campsite availability. Daily launch targets would be established at a level equal to 70% of the available campsites within the first 15 river miles of the launch point. Interim launch targets would be a maximum of 10 daily launches for overnight trips in Segment 3 and a maximum of 8 daily launches Segment 2. This would limit campsite occupancy to a maximum of 70% of the available campsites within the first 15 miles of Service Creek and Clarno launch sites on a given night (Note: Campsites located less than 2.5 miles downstream of Service Creek and Clarno were not considered as available campsites due to their proximity to launch points.). Allowing a potential maximum of 70% of available campsites to be occupied on a given night by controlling launches allows for (1) some campsites to remain unfilled, giving boaters flexibility in campsite selection, (2) the possibility that drive-in campers may occasionally occupy riverside campsites, such as Priest Hole or Juniper Island, and (3) management flexibility to close campsites for rehabilitation, as necessary.

#### **2. Motorized Boating**

Segment 1 motorized boating levels would fluctuate with public demand and would be closed from May 1 to October 1.

Segment 2 would be closed year round to motorized boating to protect river values.

Segment 3 would be closed to motorized boats from May 1 to October 1 to minimize conflicts between motorized and non-motorized users during peak use periods, with the exception that small 40 lbs. thrust or less electric motors would be allowed year round in this segment.

In Segments 10 and 11 motorized boating would be prohibited due to lack of sufficient flow for safe boating.

### **3. Dispersed Camping**

Encourage Dispersed use in areas that can best sustain impacts of camping. Additional actions designed to protect dispersed river campsites would be based on the recommendations of a LAC study, currently underway. The LAC study would take into account the desired future condition defined for each river segment and monitoring data collected on the resource conditions of each campsite. Management actions would be taken to protect resources and convert campsites to the desired condition. Campsite rehabilitation methods may include but are not limited to defining campsite perimeter boundaries, defining tent site locations, site hardening, seeding and erosion control, and temporary or permanent campsite closure.

**Segment 1** No actions.

**Segment 2** Create a map to identify river campsites which can best handle human use. Designate dispersed camping area on west bank near Clarno.

**Segment 3** Create a map to identify river campsites which can best handle human use.

**Segments 10 and 11** Identify preferred dispersed camping areas and install signs and parking barriers to protect riparian vegetation.

### **4. Developed Recreation**

The development of Recreation facilities should be proposed only if they meet one or more of the following criteria:

- 1) the facilities enhance resource-dependent recreation;
- 2) the facilities are necessary to help manage public lands and protect resource values;
- 3) the facilities are best provided by the BLM; or
- 4) the facilities complement and support other public and private recreation facilities in the area (USDI-BLM, 1989a).

The “Recreation” classification under the WSR Act does not prescribe or assume recreation development (USDI-BLM, 1992c). Development of any type of facility on public lands within a WSA is generally not permitted (USDI-BLM, 1995b). The BLM would improve or upgrade existing facilities where needed to protect resources.

**Segment 1** Maintain Cottonwood and Rock Creek recreation sites (pick up trash and pump toilets), in addition improve parking facilities, add a primitive boat ramp, and a boater registration station at Rock Creek. Add picnic tables, plant shade trees, and provide water for dump station at Cottonwood. Reestablish Cooperative Management Agreement with the Sherman County Historical Society to manage and maintain the Oregon Trail interpretive site, John Day Crossing (west side). Develop small parking area, access signing and implement regular maintenance at this interpretive site. At the Rock Creek site current parking is available along the shoulder of the road which parallels the river. The proposal to improve parking is to widen the shoulder area of the road opposite the river to allow an increased parking area the area impacted is approximately 50 yards by 20 feet. The boat launch would require surface disturbance of approximately 30 feet by 15 feet. Riparian vegetation exists on this site, surface is primarily sand. Actions would be done using a front end loader and road grader above the mean high water level and would not result in disturbance of the river bed. A narrow strip of riparian vegetation would be permanently removed - approximately 15 feet.

**Segment 2** Maintain Clarno recreation site (pick up trash and pump toilets), in addition add an additional launch lane, a pay phone, and provide water for the dump station at Clarno. The current boat launch is a narrow access road through approximately 40 feet of willow, over a primitive surface (clay and soil). The proposal is to widen the ramp to the downstream side to make the launch approximately 30 feet wide. The existing launch is approximately 8 feet wide, with willow thickets on both sides. Just upstream of the launch is a bridge abutment which creates a small backwater eddy and sediment deposition area. The launch lane is currently situated at the lower end of this sediment deposition area. The lane would be widened to the downstream direction, this would permanently remove approximately 600 square feet of willow. However, this removal of willow would be offset by the expected increase in willow establishment in the upstream deposition area which is not used to park boats and is therefore constantly trampled in the use period. Extension of the launch lane downstream will be far enough downstream from deposition area to minimize the need for dredge activities to clean launch of excess sediment which could fill launch area. The river flow pattern produces substantial flow in current launch lane area and downstream along the bank to limit sediment deposition. Hardening of the launch in some manner i.e. rock or gravel or cement will prevent the launch itself from becoming a sediment source.

**Segment 3** Maintain Service Creek and Priest Hole recreation sites (pick up trash and pump toilets), in addition develop Lower Burnt Ranch and a public site at Twickenham with parking, primitive boat ramp and boater registration station, to replace the existing Burnt Ranch and Twickenham (private) sites. Development at the Twickenham site would also include parking and a vault toilet. The purpose of these developments is to mitigate impacts to resource values at the Burnt Ranch site and replace the private Twickenham site. Development of a Twickenham site is contingent on acquiring land from a willing seller. Upon acquisition of land a site specific proposal would be prepared and ESA consultation would be reinitiated. The decision would also add a vault toilet at Priest Hole. There is a launch site located at the Twickenham bridge that would be discontinued in the advent of development at a different site at Twickenham. In the interim the BLM would maintain this site, with permission of current land owner, through grading the road access to the river. The current road is steep and rutted and very narrow.

Grading this site would decrease the slope and minimize soil loss from the road through excessive erosion.

Lower Burnt ranch launch would require surface disturbance of approximately 30 feet by 15 feet. Very little riparian vegetation exists on this site, surface is primarily sand with large cobble/boulder size rocks interspersed.. Actions would be done above the mean high water level and would not result in disturbance of the river bed. This new launch site would replace existing launch site at Burnt Ranch. The existing launch would become walk-in access only, no further surface disturbance or maintenance would occur at this site, to allow natural vegetation to recover.

**Segments 4 & 6** Existing developed areas would continue to be maintained (trash pick-up and pumping of toilets), any site maintenance such as grading would be done in existing area, above the current high water level outside of the floodplain. No additional ground development is planned.

**Segment 10 & 11** Approximately 10 years after implementation of this plan begins, develop a campground near Ellingson Mill. Facilities would include a vault toilet, tables, information board, signs, and parking barriers. Parking barriers will be installed upon implementation of the plan. These barriers would utilize existing site material such as large boulders to prohibit vehicular access to the stream and riparian area. There are approximately ten areas in which barriers would be installed typically along the road shoulder and in several areas along the terrace areas along the river that are currently used for camping and/or day use areas.

Remaining Segments no developed sites exist and no sites are planned for development.

## **B. Monitoring**

The BLM would continue to implement a LAC planning and monitoring program to determine appropriate levels for boating use and make other management decisions that protect and enhance river values. Monitoring efforts would evaluate the physical condition of campsites both before and after the high use season, observe the ability of campsite conditions to recover during the "off season", and conduct social experience surveys to determine social preferences, while correlating the data to actual recreation use levels. Data collected over a three year period would be needed before appropriate use levels could be determined.

Limits of Acceptable Change (LAC) is a process for establishing acceptable and appropriate resource and social conditions in recreation settings. LAC is based on the premise that change to the ecological and social conditions of an area will occur as a result of natural and human factors. The goal of management is to keep the character and the rate of change due to human factors within acceptable levels and consistent with desired future conditions. The primary emphasis of the LAC system is on the conditions desired rather than on how much use an area can tolerate. The management challenge is not one of how to prevent any human-induced change, but rather one of deciding what change should occur, how much change will be allowed, what management actions are needed to guide and control it, and how the managing agencies will know when the established limits are being or have been reached.

In managing the John Day River, the LAC process is designed to be the foundation for the long-term protection and enhancement of the desired future conditions for recreation that have been identified in the proposed management plan. For the most part, the desired future condition for John Day River segments identified by the plan strives to maintain the existing character of the river canyon, to preserve the existing condition of campsites and recreation sites where found to be acceptable, and to rest or close areas where conditions are found to be unacceptable.

As used on the John Day River, the LAC process involves two parts completed concurrently, which have already begun and would be continued. The first part, involves extensive data collection on current resource and social conditions, and determining what change is acceptable while maintaining desired future conditions. Key indicators would be selected which allow future tracking of the physical or social conditions (i.e. vegetation loss within campsites, number of encounters per day with other groups). For each indicator a standard or threshold level would be set, which determines the amount of change that will be accepted. The standards then serve as "triggers" which alert managing agencies to unacceptable change.

The second part of the process involves developing a set of strategies and a range of management actions which may be implemented if and when continued monitoring of conditions indicate that one or more of the "triggers" has been or is about to be reached, resulting in a level of change that is unacceptable. A list of potential management actions designed to reverse or prevent unacceptable trends would be determined in advance, so as to be ready for implementation if and when continued monitoring efforts indicate they are needed. When needed, managers may then select the management action or combination of actions likely to bring that indicator back within acceptable levels. Management actions previously implemented to protect resource and social

conditions such as group size limits and porta-potty and firepan requirements, would be continued unless modified as a result of the LAC process.

In spring of 1999, extensive data collection was begun on the current physical condition of campsites in Segments 2 and 3. For the next two years, the condition of these sites will continue to be monitored before and after each boating season, and social surveys will be conducted to collect social preference data. Simultaneous with review of the data collected, strategies for dealing with potential unacceptable conditions would be developed. Examples of potential management actions which may be considered for use on the John Day if and when LAC determines they are needed include but are not limited to staggered launch times, temporary campsite closure, a campsite reservation system, reduction in allowable party size, limitations on the number of watercraft per group, and boating use limits. If resource and social conditions do not meet the "trigger" point and management actions are not necessary at this time, a list of management actions will be ready for potential implementation in the future. The LAC process may be initiated on other river segments if future resource and social conditions become a concern, and the monitoring data collected through LAC may be used in the management of other resources.

### **C. Actions for Coverage**

#### **Boating Use Levels**

**NMFS & USFWS:** Proposed actions under this program do not meet the level of 'may effect' actions. Therefore the BLM is not seeking coverage of any actions under boating use levels. If monitoring (LAC) results over time show an increased level of impacts from recreation i.e. boating use the consultation will be reinitiated. The LAC process of measuring changes and managing use to limit those changes to an acceptable or static level will limit impacts to steelhead habitat.

#### **Motorized Boating**

**NMFS:** The BLM is seeking coverage of motorized boating use in Segments 1 and 3 from October 1 to May 1.

#### **Dispersed Recreation**

**NMFS:** Most actions within the disperse camping program do not meet the level of 'may effect' actions; however, the BLM is seeking coverage for beneficial effects resulting from the installation of barrier posts to prevent vehicle access to river and riparian areas in segments 10 & 11.

#### **Developed Recreation**

**NMFS:** The BLM is seeking coverage for boat launch development actions at Rock Creek, Clarno, Twickenham and Lower Burnt Ranch. The proposal for development in Segment 11 at Ellingson Mill will be consulted on when more specific detail on development are described in approximately 8-10 years.

## D. Summary of Effects and Effects Analysis

### 1. Boating Use Levels

	Direct Impacts	Indirect Impacts
Affects on Steelhead	NE	NE
Affects on Critical Habitat	NE	NE
Affects on Bull Trout	NE	NE

Interim daily launch targets resulting in the occupancy of not more than 70% of established campsites (8 launches in Segment 2 and 10 launches in Segment 3) would reduce the potential of startling migratory steelhead or migratory or spawning chinook. The likelihood of increased physical stress level of salmon and steelhead due to encounters with boats would be slightly reduced.

Increased stream bank vegetation resulting from the new distribution of use under this alternative would be unlikely to result in meaningful changes in fish habitat because the total bank area subject to camping and boat landing is a small proportion of the total river frontage.

Interim daily launch targets resulting in the occupancy of not more than 70% of established campsites (8 launches in Segment 2 and 10 launches in Segment 3) would reduce the potential of startling migratory steelhead or migratory or spawning chinook. The likelihood of increased physical stress level of salmon and steelhead due to encounters with boats would be slightly reduced. These actions would not create a likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding and sheltering.

Increased stream bank vegetation resulting from the new distribution of use under this alternative would be unlikely to result in meaningful changes in fish habitat because the total bank area subject to camping and boat landing is a small proportion of the total river frontage.

**Rationale for Checklist Ratings of Effects for Population and Environmental Indicators for Boating Use Levels within the John Day River Corridor including mainstem river and tributary areas as outlined in Chapter 2.**

**Water Temperature:** Boating use levels would not affect this indicator.

**Sediment/Turbidity:** Boating use levels would not affect this indicator.

**Chemical Contamination/Turbidity:** Boating use levels would not affect this indicator.

**Physical Barriers:** Boating use levels would not affect this indicator.

**Substrate Embeddedness:** Boating use levels would not affect this indicator.

**Large Wood:** Boating use levels would not affect this indicator.

**Pool Frequency:** Boating use levels would not affect this indicator.

**Pool Quality:** Boating use levels would not affect this indicator.

**Off-Channel Habitat:** Boating use levels would not affect this indicator.

**Refugia:** Boating use levels would not affect this indicator.

**Wetted Width/Max Depth Ratio:** Boating use levels would not affect this indicator.

**Streambank Condition:** Boating use levels would tend to benefit this indicator when management is consistent with LAC finding (See monitoring section).

**Floodplain Connectivity:** Boating use levels would not affect this indicator.

**Changes in Peak/Base Flow:** Boating use levels would not affect this indicator.

**Drainage Network Increase:** Boating use levels would not affect this indicator.

**Road Density and Location:** Boating use levels would not affect this indicator.

**Disturbance History:** Boating use levels would not affect this indicator.

**Riparian Reserves:** As described in the environmental baseline section, no assessment of riparian potential has occurred.



Table 33. Checklist for documenting environmental base line and effects of proposed actions on relevant indicators for Segments 1,2,3 mainstem river with regard to Boating Use Levels.

<b><u>PATHWAYS:</u></b> <b>INDICATORS</b>	<b>ENVIRONMENTAL BASELINE</b>			<b>EFFECTS OF THE ACTION(S)</b>		
	<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>	<b>Restore</b>	<b>Maintain</b>	<b>Degrade</b>
<b><u>Water Quality:</u></b>		X			X	
Temperature						
Sediment		X			X	
Chem. Contam./Nut.	X				X	
<b><u>Habitat Access:</u></b>	X				X	
Physical Barriers						
<b><u>Habitat Elements:</u></b>	N/A				X	
Substrate						
Large Woody Debris	N/A				X	
Pool Frequency	X				X	
Pool Quality	X				X	
Off-Channel Habitat	N/A				X	
Refugia	N/A				X	
<b><u>Channel Cond. &amp; Dyn:</u></b>	X				X	
Width/Depth Ratio						
Streambank Cond.		X			X+	
Floodplain Connectivity		X			X	
<b><u>Flow/Hydrology:</u></b>		X			X	
Peak/Base Flows						
Drainage Network Increase	X				X	
<b><u>Watershed Conditions:</u></b>		X			X	
Road Dens. & Loc.						
Disturbance History	N/A				X	
Riparian Reserves	N/A				X	

\*\* In the maintain category X+ denotes effects which will maintain the indicator but which will have beneficial effects but not to the extent to restore the indicator, X- denotes effects which will maintain the indicator but which will have detrimental effects but not to the extent to degrade the indicator

### **Answers to the Dichotomous Key For Making ESA Determination of Effects for Boating Use Levels in the John Day River Corridor containing mainstem and tributary reaches as defined in Chapter 2.**

**1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?**

Yes Summer Steelhead

**2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?**

No, boating use levels will not prevent the attainment of the relevant properly functioning indicators..

**3. Does the proposed action(s) have the potential to result in “take” of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?**

Boating use along Segments 1, 2 and 3, which is migratory habitat for steelhead will not create a likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding and sheltering. **No Effect**

## 2. Motorized Boating

	Direct Impacts	Indirect Impacts
Affects on Steelhead	NLAA	NE
Affects on Critical Habitat	NE	NE
Affects on Bull Trout	NE	NE

Motorized boating would be prohibited year round in segment 2, 10 and 11, open seasonally in segments 1 and 3 and open year round to small electric motors in segment 3. Motorized boating is done during high water seasons in the basin, any water quality impacts through this use would be minimal. Only migratory fish as present in areas and during times of open motorized boating. This action would not create a likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding and sheltering.

The analyses of impacts of motorized boating on vegetation and water quantity and quality indicate that motorized boating can result in physical and chemical impacts to the water and shoreline that in turn impact fish and fish habitat. These areas support a specific vegetative community of sedges, rushes and grasses that provide important habitat for fish, especially bass spawning and rearing areas. Loss of riparian vegetation and subsequent erosion reduces cover for fish.

Loss of riparian vegetation reduces riparian functioning which, in turn, may increase water temperature and the presence of pollutants and suspended sediments in the river. Salmon and steelhead are especially sensitive to these conditions, but do not inhabit the mainstem river in these areas at times when these conditions would alter temperature to an extent to have an effect on their behavior or survival.

There are two direct impacts of motorized boating. First, disturbance by the sight and sound of motorized boats can cause increased levels of startling and trigger a vigorous escape response and may disrupt spawning behavior of chinook or migratory behavior of chinook and steelhead. Such a response can lead to increased environmental stress levels in fish that can lead to mortality before spawning can take place; however, the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding and sheltering is very low. Second, pollution from motors can have detrimental effects on fish populations because small amounts of gasoline can prove fatal to fish. Some estimates suggest that up to 10-20% of fuel used in two-stroke engines is discharged directly into the water (Jackivicz and Kuzminski 1973a).

Segment 1 - In addition to the impacts described above, the impacts from motorized boating would include the impacts as described in Boating Use Levels. As use increases these impacts would increase proportionally. Continuing to allow motorized boating from October 1 to April 30 would limit potential for impacts from motorized boating to this time period. The number of motorized boats currently using the John Day during these times is expected to increase in the future and as a result would increase the likelihood of the types of interactions described above, especially during the month of October, when migrating steelhead are in this section of the river.

Segment 2 - Closing this river segment to motorized boating all year would eliminate the possibility that impacts associated with motorized boating could occur in this segment. Since motorized boating occurs at low levels and seldom when use has the greatest potential for impacts eliminating motorized boating is not likely to affect fish or fish populations.

Segment 3 - April 1 to October 1 closure would reduce the potential for impacts on spring chinook and summer steelhead. Use of small electric motors during closure would not impact fish.

Segments 10 & 11 - Closing Segments 10 and 11 to motorized boating would have little impact on fish or fish populations because there is no known motorized boating occurring at this time. This action would eliminate the potential for impacts resulting from motorized boating in the future.

**Rationale for Checklist Ratings of Effects for Population and Environmental Indicators for Motorized Boating within the John Day River Corridor including mainstem river and tributary areas as outlined in Chapter 2.**

**Water Temperature:** Motorized boating would not affect this indicator.

**Sediment/Turbidity:** Motorized boating would not affect this indicator.

**Chemical Contamination/Turbidity:** Motorized boating would add chemicals into the stream during times of motorized boating use. This time period coincides with higher flow times that would dilute chemicals and minimize impacts.

**Physical Barriers:** Motorized boating would not affect this indicator.

**Substrate Embeddedness:** Motorized boating would not affect this indicator.

**Large Wood:** Motorized boating would not affect this indicator.

**Pool Frequency:** Motorized boating would not affect this indicator.

**Pool Quality:** Motorized boating would not affect this indicator.

**Off-Channel Habitat:** Motorized boating would not affect this indicator.

**Refugia:** Motorized boating would not affect this indicator.

**Wetted Width/Max Depth Ratio:** Motorized boating would not affect this indicator.

**Streambank Condition:** Motorized boating will not affect this indicator when management is consistent with LAC finding (See monitoring section).

**Floodplain Connectivity:** Motorized boating would not affect this indicator.

**Changes in Peak/Base Flow:** Motorized boating would not affect this indicator.

**Drainage Network Increase:** Motorized boating would not affect this indicator.

**Road Density and Location:** Motorized boating would not affect this indicator.

**Disturbance History:** Motorized boating would not affect this indicator.

**Riparian Reserves:** As described in the environmental baseline section, no assessment of riparian potential has occurred. However, noxious weed control is designed to protect and improve the riparian areas.

Table 34. Checklist for documenting environmental base line and effects of proposed actions on relevant indicators for Segments 1,2,3 mainstem river with regard to Motorized Boating.

<b><u>PATHWAYS:</u></b>	<b>ENVIRONMENTAL BASELINE</b>			<b>EFFECTS OF THE ACTION(S)</b>		
<b>INDICATORS</b>	<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>	<b>Restore</b>	<b>Maintain</b>	<b>Degrade</b>
<b><u>Water Quality:</u></b>		X			X	
Temperature						
Sediment		X			X	
Chem. Contam./Nut.	X				X-	
<b><u>Habitat Access:</u></b>	X				X	
Physical Barriers						
<b><u>Habitat Elements:</u></b>	N/A				X	
Substrate						
Large Woody Debris	N/A				X	
Pool Frequency	X				X	
Pool Quality	X				X	
Off-Channel Habitat	N/A				X	
Refugia	N/A				X	
<b><u>Channel Cond. &amp; Dyn:</u></b>	X				X	
Width/Depth Ratio						
Streambank Cond.		X			X	
Floodplain Connectivity		X			X	
<b><u>Flow/Hydrology:</u></b>		X			X	
Peak/Base Flows						
Drainage Network Increase	X				X	
<b><u>Watershed Conditions:</u></b>		X			X	
Road Dens. & Loc.						
Disturbance History	N/A				X	
Riparian Reserves	N/A				X	

\*\* In the maintain category X+ denotes effects which will maintain the indicator but which will have beneficial effects but not to the extent to restore the indicator, X- denotes effects which will maintain the indicator but which will have detrimental effects but not to the extent to degrade the indicator

## Answers to the Dichotomous Key For Making ESA Determination of Effects for Motorized Boating in the John Day River Corridor containing mainstem and tributary reaches as defined in Chapter 2.

### 1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Summer Steelhead

### 2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, motorized boating will not prevent the attainment of the relevant properly functioning indicators..

**3. Does the proposed action(s) have the potential to result in “take” of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?**

Motorized boating use in Segments 1 and 3, which is migratory habitat for steelhead has a very slight probability of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding and sheltering. **Not Likely to Adversely Affect**

### 3. Dispersed Camping

	Direct Impacts	Indirect Impacts
Affects on Steelhead	NE	NLAA
Affects on Critical Habitat	NE	NE
Affects on Bull Trout	NE	NE

The installation of dispersed camping area signs and a user map, will not have any effects on relevant indicators for steelhead. Management of dispersed camping areas in conjunction with LAC monitoring will limit impacts by altering management accordingly. Installation of barrier posts along areas of the South Fork corridor to prevent vehicle access to riparian areas will enhance riparian area growth and functioning thereby benefitting steelhead habitat.

Segment 1 - Any changes in stream bank vegetation resulting from proposed management would be unlikely to result in meaningful changes in fish habitat because the total bank area subject to camping and boat landing is a small proportion of the total river frontage.

Segment 2 - Designating a dispersed camping area near Clarno and identifying sites suitable for camping would encourage use of these areas and decrease use in other areas. This redistribution of use would promote a common level of riparian area development in dispersed camping areas which would benefit steelhead habitat parameters.

Segment 3 - Identification of sites that can best handle human use would have the same impacts described above for Segment 2.

Segments 10-11 - Identification of sites that can best handle human use, providing signs, and installing barricades to prevent motor vehicles from entering riparian areas would have the same impacts as described for Segment 2. In addition, by keeping motor vehicles out of riparian areas, the potential for the spilling of petroleum product that could affect water quality would be reduced.





**Rationale for Checklist Ratings of Effects for Population and Environmental Indicators for Dispersed Camping within the John Day River Corridor including mainstem river and tributary areas as outlined in Chapter 2.**

**Water Temperature:** Dispersed Camping would not affect this indicator.

**Sediment/Turbidity:** Dispersed Camping would not affect this indicator.

**Chemical Contamination/Turbidity:** Dispersed Camping would not affect this indicator, in segments 10 and 11 installation of barrier posts to eliminate vehicle access to river and riparian areas will reduce chemical inputs from vehicles in these areas.

**Physical Barriers:** Dispersed Camping would not affect this indicator.

**Substrate Embeddedness:** Dispersed Camping would not affect this indicator.

**Large Wood:** Dispersed Camping would not affect this indicator.

**Pool Frequency:** Dispersed Camping would not affect this indicator.

**Pool Quality:** Dispersed Camping would not affect this indicator.

**Off-Channel Habitat:** Dispersed Camping would not affect this indicator.

**Refugia:** Dispersed Camping would not affect this indicator.

**Wetted Width/Max Depth Ratio:** Dispersed Camping would not affect this indicator.

**Streambank Condition:** Dispersed Camping will not affect this indicator when management is consistent with LAC finding (See monitoring section). Riparian recovery will be promoted in segments 10 & 11 after the installation of barrier posts to prevent vehicular access to river and riparian areas.

**Floodplain Connectivity:** Dispersed Camping would not affect this indicator.

**Changes in Peak/Base Flow:** Dispersed Camping would not affect this indicator.

**Drainage Network Increase:** Dispersed Camping would not affect this indicator.

**Road Density and Location:** Dispersed Camping would not affect this indicator.

**Disturbance History:** Dispersed Camping would not affect this indicator.

**Riparian Reserves:** As described in the environmental baseline section, no assessment of riparian potential has occurred. However, noxious weed control is designed to protect and improve the riparian areas.

Table 35. Checklist for documenting environmental base line and effects of proposed actions on relevant indicators for Segments 1,2,3 mainstem river and Segments 10 & 11 S.F. John Day with regard to Dispersed Camping.

<b><u>PATHWAYS:</u></b>	<b>ENVIRONMENTAL BASELINE</b>			<b>EFFECTS OF THE ACTION(S)</b>		
<b>INDICATORS</b>	<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>	<b>Restore</b>	<b>Maintain</b>	<b>Degrade</b>
<b><u>Water Quality:</u></b>		X			X	
Temperature						
Sediment		X			X	
Chem. Contam./Nut.	X				X+	
<b><u>Habitat Access:</u></b>	X				X	
Physical Barriers						
<b><u>Habitat Elements:</u></b>	N/A				X	
Substrate						
Large Woody Debris	N/A				X	
Pool Frequency	X				X	
Pool Quality	X				X	
Off-Channel Habitat	N/A				X	
Refugia	N/A				X	
<b><u>Channel Cond. &amp; Dyn:</u></b>	X				X	
Width/Depth Ratio						
Streambank Cond.		X			X+	
Floodplain Connectivity		X			X	
<b><u>Flow/Hydrology:</u></b>		X			X	
Peak/Base Flows						
Drainage Network Increase	X				X	
<b><u>Watershed Conditions:</u></b>		X			X	
Road Dens. & Loc.						
Disturbance History	N/A				X	
Riparian Reserves	N/A				X	

\*\* In the maintain category X+ denotes effects which will maintain the indicator but which will have beneficial effects but not to the extent to restore the indicator, X- denotes effects which will maintain the indicator but which will have detrimental effects but not to the extent to degrade the indicator

## Answers to the Dichotomous Key For Making ESA Determination of Effects for Dispersed Camping in the John Day River Corridor containing mainstem and tributary reaches as defined in Chapter 2.

### 1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

Yes, Summer Steelhead

### 2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?

No, dispersed camping management will not prevent the attainment of the relevant properly functioning indicators..

**3. Does the proposed action(s) have the potential to result in “take” of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?**

Dispersed Camping management in Segments 1, 2, 3, 10 and 11 will not result in ‘take’ of listed anadromous salmonids and will not result in the destruction or adverse modification or designated critical habitat. There will be beneficial effects resulting from barrier post installations in segments 10 & 11 which prevent vehicle entry into river and riparian areas. **Not Likely to Adversely Affect**

#### 4. Developed Recreation

	Direct Impacts	Indirect Impacts
Affects on Steelhead	NE	NE
Affects on Critical Habitat	NE	NLAA
Affects on Bull Trout	NE	NE

The development and upgrades of new and existing boat launches along the John Day River at Rock Creek, Clarno, Lower Burnt Ranch and Twickenham will permanently remove a small section of riparian vegetation at each site. This loss of vegetation will be offset by improvements in riparian vegetation in areas adjacent to proposed development which are currently being used for this activity without the benefit of proper surface materials or concentration of use. Therefore there will be no net gain or loss of riparian habitat as a result of these actions. There will initially be a slight increase to sediment production as a result of ground disturbance in these areas. Development will occur according to ODFW's instream working timing guidelines, and most recreation use occurs during the early summer when steelhead are not present in this part of the basin.

**Rationale for Checklist Ratings of Effects for Population and Environmental Indicators for Developed Recreation in the John Day River Corridor as described in Chapter 2.**

**Water Temperature:** According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Sediment/Turbidity:** Maintenance and upgrades of existing facilities or development of new facilities could produce a slight short term increase in sedimentation and erosion.

**Chemical Contamination/Turbidity:** Maintenance and upgrades of existing facilities or development of new facilities could produce a slight short term increase in local water turbidity.

**Physical Barriers:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Substrate Embeddedness:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Large Wood:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Pool Frequency:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Pool Quality:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Off-Channel Habitat:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Refugia:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Wetted Width/Max Depth Ratio:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Streambank Condition:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Floodplain Connectivity:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Changes in Peak/Base Flow:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Drainage Network Increase:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Road Density and Location:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Disturbance History:** Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

**Riparian Reserves:** As described in the environmental baseline section, no assessment of riparian potential has occurred. Maintenance and upgrades of existing facilities or development of new facilities will not affect this parameter.

Table 36. Checklist for documenting environmental base line and effects of proposed actions on relevant indicators for Segments 1,2,3,4 mainstem river with regard to Developed Recreation.

<b><u>PATHWAYS:</u></b> <b>INDICATORS</b>	<b>ENVIRONMENTAL BASELINE</b>			<b>EFFECTS OF THE ACTION(S)</b>		
	<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>	<b>Restore</b>	<b>Maintain</b>	<b>Degrade</b>
<b><u>Water Quality:</u></b>		X			X	
Temperature						
Sediment		X			X-	
Chem. Contam./Nut.	X				X	
<b><u>Habitat Access:</u></b>	X				X	
Physical Barriers						
<b><u>Habitat Elements:</u></b>	N/A				X	
Substrate						
Large Woody Debris	N/A				X	
Pool Frequency	X				X	
Pool Quality	X				X	
Off-Channel Habitat	N/A				X	
Refugia	N/A				X	
<b><u>Channel Cond. &amp; Dyn:</u></b>	X				X	
Width/Depth Ratio						
Streambank Cond.		X			X	
Floodplain Connectivity		X			X	
<b><u>Flow/Hydrology:</u></b>		X			X	
Peak/Base Flows						
Drainage Network Increase	X				X	
<b><u>Watershed Conditions:</u></b>		X			X	
Road Dens. & Loc.						
Disturbance History	N/A				X	
Riparian Reserves	N/A				X	

\*\* In the maintain category X+ denotes effects which will maintain the indicator but which will have beneficial effects but not to the extent to restore the indicator, X- denotes effects which will maintain the indicator but which will have detrimental effects but not to the extent to degrade the indicator



**Answers to the Dichotomous Key For Making ESA Determination of Effects for Developed Recreation in the John Day River Corridor Segments 1-3 - mainstem John Day River as defined in Chapter 2.**

**1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?**

Yes, Summer Steelhead.

**2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?**

No, the proposed maintenance and upgrades of existing facilities or development of new facilities were designed to attain or protect the relevant properly functioning indicators.

**3. Does the proposed action(s) have the potential to result in “take” of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?**

There is a less than negligible probability of ‘take’ of proposed/listed anadromous salmonids, the actions described will result in a loss and subsequent gain of riparian vegetation with regard to designated critical habitat. There is the potential for slight sedimentation increases short term at these sites. **Not Likely to Adversely Affect**

## **X. Public Access**

### **A. Actions Proposed and Program Description**

Continue to seek a river access point on public land at Twickenham to replace the current private access. Ditches and culverts would be improved on the South Fork Road. Work with local government to clarify status of access to the Oregon Trail interpretive site (west side) and McDonald Crossing. Use signs to mark the public access routes to this interpretive site, by foot from the west river bank and by vehicle from the east and west banks. Culvert replacement would reinitiate ESA consultation on specific project criteria. Approximately 67 miles of ongoing road maintenance is scheduled for each year in the basin located on the Squaw Creek road, Holmes Creek road, South Fork road and Indian Creek road. This includes blading the road surface, cleaning ditches and culverts that have filled, brushing, and resealing an aggregate surface. Some road maintenance is specifically designed to reduce runoff from roads into streams. No sidecasting of road materials towards streams is done.

Continue to resolve public access issues by consolidating public land ownership patterns through exchanges with willing landowners for state and private lands, through an active easement acquisition program, and through partnership agreements to provide access to high value recreation opportunities. BLM policy encourages active participation in the Land and Water Conservation Fund for acquisition of appropriate recreation lands or interest in lands (USDI-BLM, 1989a).

Grade, surface, or widen gravel roads as needed.

**Segment 1** Maintain access at current levels.

**Segment 2** Maintain access at current levels, in addition improve BLM road on west bank from Clarno to Clarno Homestead.

**Segment 3** Maintain access at current levels, in addition close the existing Burnt Ranch site to vehicle access while improving access to Lower Burnt Ranch site. Develop trail to existing Burnt Ranch site.

**Segments 10 and 11** Maintain access at current levels, in addition apply gravel to the surface of the South Fork Road.

### **B. Monitoring**

Onsite inspections are done at the time of maintenance to insure resources are being protected, this occurs with a road engineer and biologist on the ground at the same time communicating needs and procedures.

### **C. Actions for Coverage**

**NMFS:** The BLM is seeking coverage on road maintenance activities including 67 miles of ongoing road maintenance each year which entails blading the road surface, cleaning ditches and

culverts that have filled, brushing, and resealing an aggregate surface. These actions have already received and approved Biological Opinion, however, since portions of these actions are described in the Plan the BLM is again seeking coverage of these action as they pertain to inclusion in the Plan boundaries.

#### **D. Summary of Effects and Effects Analysis**

##### **Public Access - Segments 1-3**

	Direct Impacts	Indirect Impacts
Affects on Steelhead	NE	NE
Affects on Critical Habitat	NLAA	NE
Affects on Bull Trout	NE	NE

This alternative includes road maintenance, site upgrades and/or maintenance as outlined in the proposed action. This includes sites such as Rock Creek access, Clarno access, the road on the west bank of Clarno, Burnt Ranch access site and Twickenham access site, all in segments 1-3. Road maintenance activities in Segments 1-3 are considered NLAA actions due to habitat involved and proximity of road to stream.

**Rationale for Checklist Ratings of Effects for Population and Environmental Indicators for Public Access within Segment 1-3 - Mainstem John Day River Corridor as described in Chapter 2.**

**Water Temperature:** According to Platts (1991), the ability of plants to control stream temperatures varies with their morphology. Grass crowns provide modest overhanging cover but grasses are too short to keep much solar radiation from reaching the water, except along very small streams (stream orders 1 and 2). Maintenance and upgrades of existing access areas will not affect this parameter.

**Sediment/Turbidity:** Maintenance and upgrades of existing access areas could produce a slight short term increase in sedimentation and erosion.

**Chemical Contamination/Turbidity:** Maintenance and upgrades of existing access areas could produce a slight short term increase in local water turbidity.

**Physical Barriers:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Substrate Embeddedness:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Large Wood:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Pool Frequency:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Pool Quality:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Off-Channel Habitat:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Refugia:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Wetted Width/Max Depth Ratio:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Streambank Condition:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Floodplain Connectivity:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Changes in Peak/Base Flow:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Drainage Network Increase:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Road Density and Location:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Disturbance History:** Maintenance and upgrades of existing access areas will not affect this parameter.

**Riparian Reserves:** As described in the environmental baseline section, no assessment of riparian potential has occurred. Maintenance and upgrades of existing access areas will not affect this parameter.

Table 37. Checklist for documenting environmental base line and effects of proposed actions on relevant indicators for Segments 1,2,3,4 mainstem river with regard to Public Access.

<b><u>PATHWAYS:</u></b> <b>INDICATORS</b>	<b>ENVIRONMENTAL BASELINE</b>			<b>EFFECTS OF THE ACTION(S)</b>		
	<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>	<b>Restore</b>	<b>Maintain</b>	<b>Degrade</b>
<b><u>Water Quality:</u></b>		X			X	
Temperature						
Sediment		X			X-	
Chem. Contam./Nut.	X				X	
<b><u>Habitat Access:</u></b>	X				X	
Physical Barriers						
<b><u>Habitat Elements:</u></b>	N/A				X	
Substrate						
Large Woody Debris	N/A				X	
Pool Frequency	X				X	
Pool Quality	X				X	
Off-Channel Habitat	N/A				X	
Refugia	N/A				X	
<b><u>Channel Cond. &amp; Dyn:</u></b>	X				X	
Width/Depth Ratio						
Streambank Cond.		X			X	
Floodplain Connectivity		X			X	
<b><u>Flow/Hydrology:</u></b>		X			X	
Peak/Base Flows						
Drainage Network Increase	X				X	
<b><u>Watershed Conditions:</u></b>		X			X	
Road Dens. & Loc.						
Disturbance History	N/A				X	
Riparian Reserves	N/A				X	

\*\* In the maintain category X+ denotes effects which will maintain the indicator but which will have beneficial effects but not to the extent to restore the indicator, X- denotes effects which will maintain the indicator but which will have detrimental effects but not to the extent to degrade the indicator

**Answers to the Dichotomous Key For Making ESA Determination of Effects for Public Access in the John Day River Corridor Segments 1-3 - mainstem John Day River as defined in Chapter 2.**

**1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?**

Yes, Summer Steelhead.

**2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?**

No, the proposed maintenance and upgrades of existing access areas were designed to attain or protect the relevant properly functioning indicators.

**3. Does the proposed action(s) have the potential to result in “take” of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?**

There is a less than negligible probability of take of proposed/listed anadromous salmonids, or the effects are insignificant and discountable. **Not Likely to Adversely Affect**

Public Access - S.F. John Day Access Road

	Direct Impacts	Indirect Impacts
Affects on Steelhead	NE	NE
Affects on Critical Habitat	LAA	NE
Affects on Bull Trout	NE	NE

The BLM periodically maintains roads (blading and cleaning ditches/culverts), or contracts the work to the Forest Service. The SF John Day road is surfaced with aggregate rock, average gradient is low, is well drained, and exhibits very little surface erosion. Road shoulders are well vegetated and generally there is a dense vegetation buffer between the road and the river. Road maintenance of existing roads is crucial to prevent large amounts of sediment from entering streams. Filled ditches and side drainage culverts can plug up, causing over road bed flows during storm events. This can deliver a much higher than normal pulse of sediment when road materials are also washed into the stream. This proposed action includes road maintenance along the S.F. John Day Access road. Road access along this road (the S.F. John Day) is considered a Likely to Adversely Affect action due to the timing of maintenance, type of habitat (spawning and rearing) involved and proximity of road to river and riparian area.



## **Rationale for Checklist Ratings of Effects for population and Environmental Indicators for Road Maintenance on the South Fork John Day River Access Road.**

**Water Temperature:** Maintenance of this road is preventing the establishment of riparian vegetation in isolated areas. This occurs where the road is adjacent to the stream. This is causing a minor adverse effect to summer water temperatures.

**Sediment/Turbidity:** The use and maintenance of soil/gravel roads causes chronic sources of fine sediment to be potentially mobilized and delivered to stream channels. Vegetation along these road shoulders is instrumental in catching and stabilizing most sediment runoff of the road surfaces. Culvert installation may cause short term increases in turbidity and sediment delivery to the SFJDR.

**Chemical Contamination/Turbidity:** Road maintenance should not affect water chemistry.

**Physical Barriers:** Road maintenance will not cause migration barriers.

**Substrate Embeddedness:** Potentially a small amount of fine sediment could enter the system due to road maintenance.

**Large Wood:** Maintenance of these roads does prevent woody vegetation from establishing in isolated areas. These areas are isolated, and should not be significant enough to degrade steelhead habitat.

**Pool Frequency:** Road maintenance will not change pool frequency or flow regimes significantly enough to alter pool formation.

**Pool Quality:** Sediment input will not increase due to road maintenance that will affect the quality or depth of pools.

**Off-Channel Habitat:** There should be no effects to off channel habitat due to road maintenance.

**Refugia:** Road maintenance will not affect spawning, and migratory habitat for steelhead and chinook. There is a minimal likelihood of affecting rearing habitat due to the loss of riparian vegetation where this road is adjacent to the stream.

**Wetted Width/Max Depth Ratio:** Road maintenance is not expected to effect the wetted width/max depth ratio.

**Streambank Condition:** No significant bank damage is anticipated to occur due to the road maintenance. This should not have a significant affect to steelhead habitat.

**Floodplain Connectivity:** Road maintenance will not significantly affect floodplain function and connection to the stream during flood events beyond the impact of the road physically occupying isolated segments of active floodplains. Wetland areas and riparian vegetation will be maintained.

**Changes in Peak/Base Flow:** Road maintenance will not change the flow regime.

**Drainage Network Increase:** Road maintenance will not increase the drainage network.

**Road Density and Location:** Road densities will not change with road maintenance.

**Disturbance History:** Disturbance history will not be affected by road maintenance.

**Riparian Reserves:** As described in the environmental baseline section, no assessment of riparian potential has occurred. However, road maintenance should not significantly effect the riparian areas.

Table 38. Showing the checklist for documenting environmental base line and effects of road maintenance on relevant indicators for Segment 10 & 11 along the S.F. John Day River.

<b><u>PATHWAYS:</u></b> <b>INDICATORS</b>	<b>ENVIRONMENTAL BASELINE</b>			<b>EFFECTS OF THE ACTION(S)</b>		
	<b>Properly Functioning</b>	<b>At Risk</b>	<b>Not Properly Functioning</b>	<b>Restore</b>	<b>Maintain</b>	<b>Degrade</b>
<b><u>Water Quality:</u></b>		X			X	
Temperature						
Sediment			X		X-	
Chem. Contam./Nut.		X			X	
<b><u>Habitat Access:</u></b>			X		X	
Physical Barriers						
<b><u>Habitat Elements:</u></b>			X		X	
Substrate						
Large Woody Debris			X		X	
Pool Frequency		X			X	
Pool Quality		X			X	
Off-Channel Habitat		X			X	
Refugia		X			X	
<b><u>Channel Cond. &amp; Dyn:</u></b>		X			X	
Width/Depth Ratio						
Streambank Cond.		X			X	
Floodplain Connectivity		X			X	
<b><u>Flow/Hydrology:</u></b>		X			X	
Peak/Base Flows						
Drainage Network Increase		X			X	
<b><u>Watershed Conditions:</u></b>		X	X		X	
Road Dens. & Loc.						
Disturbance History	X			N/A		
Riparian Reserves	N/A			N/A		

\*\* In the maintain category X+ denotes effects which will maintain the indicator but which will have beneficial effects but not to the extent to restore the indicator, X- denotes effects which will maintain the indicator but which will have detrimental effects but not to the extent to degrade the indicator

### **Answers to the Dichotomous Key For Making ESA Determination of Effects for Road Maintenance in Segment 10 & 11 on the South Fork John Day River.**

**1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?**

Yes, Summer Steelhead

**2. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators?**

No, road maintenance will not prevent the attainment of relevant properly functioning indicators.

**3. Does the proposed action(s) have the potential to result in “take” of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?**

There is more than a negligible probability of destruction/adverse modification of habitat due to the fact that the South Fork John Day River road is directly adjacent to the stream in isolated locations. This prevents the establishment of riparian vegetation that steelhead fry utilize for cover. **Likely to adversely affect**

## **XI. Energy and Mineral Resources**

### **A. Proposed Actions and Program Description**

All public lands are open to recreational mineral collection unless there are prior rights, such as mining claims.

Since the river segments were classified by legislation as “Recreational”, the mineral estate was not withdrawn from mineral entry as it would have been if the river was classified “Wild”. All mining related activity, including road construction, must meet screening standards prescribed in State Scenic Waterway(SSW) Rules. All lands in the WSR corridor are subject to a Plan of Operations under the regulations at 43 CFR 3809. Additional guidance for energy and mineral resources is found in the Two Rivers and John Day RMPs, BLM Manual 8351 (USDI-BLM, 1992c) for Wild and Scenic Rivers, the Technical Report of the Interagency WSR Coordinating Council and BLM Manual H-8550-1 (USDI-BLM, 1995b) for WSAs.

#### **Leasable Minerals**

There is no leasing of fluid minerals within sections of the corridor that are under wilderness review. In the Two Rivers RMP area a restrictive no surface occupancy stipulation for fluid minerals exploration and development is maintained on lands identified as nationally significant or visually sensitive. The John Day RMP, which applies to the upper John Day (and South Fork) basins does not address leasable minerals.

Exceptions to the stipulation of no surface occupancy would be evaluated using the following criteria: (1)Evidence of exploration or similar activities would not be visible from the surface of the John Day River. (2)All activities involving exploration would use existing roads to the fullest extent possible. (3)Any proposed exploratory drilling pad or road construction for access to a drilling site would be located to avoid canyon slopes and areas of high visibility. In these areas, roads and drilling sites would be fully rehabilitated when operations have been completed.

If leases are issued with the no surface occupancy stipulation, the criteria for exception would be included in the stipulation.

#### **Locatable Minerals**

Areas not specifically withdrawn from mineral entry under the Mining Law of 1872, as amended, would continue to be open under the mining laws to help meet the demand for minerals. Mineral exploration and development on public land would be regulated under 43 CFR 3809 to prevent unnecessary and undue land degradation. Under the 43 CFR 3809 regulations all mining in WSR corridors requires a Plan of Operations. If the John Day River is ever ruled to be navigable, the bed and banks would be considered state land, and not subject to location under the 1872 Mining Law.

State law provides the minimum standard for environmental protection, with which any activities on BLM land must comply. State Scenic Waterway rules for dredging are set by ORS 390.835(2). This law requires a permit for any dredging, regardless of the amount, from the

Oregon Division of State Lands (ODSL). In other waters, a permit is required only for movement of more than 50 cubic yards. Also, suction dredging in SSWs may not: (a) divert a waterway or obstruct fish passage; (b) include nozzling outside the wet perimeter; (c) move boulders or logs from the wet perimeter, except by hand; (d) disturb any woody plants; (e) excavate from the streambank; (f) fail to level pits and furrows outside the main channel; (g) occur without a ODEQ discharge permit; (h) occur on federal lands without permission; (i) impede boating; (j) operate within 500 ft of a home or campground between 6 pm and 8 am; or, (k) operate within posted swimming areas.

A permit from the ODEQ is also required for suction dredges. Under that permit, suction dredging is prohibited on the John Day mainstem, North Fork, Middle Fork, and South Fork for all but six weeks of each year. Suction dredging is permitted only between July 15 and August 31, in order to protect anadromous fish.

### **Salable Minerals**

Salable minerals, including common varieties of sand, gravel, and stone, would continue to be made available at the three sites located within the John Day River corridor. The salable mineral program involves several quarries where state and county road departments obtain rock for road surfacing material. New quarry sites may be developed on a case-by-case basis if requested by the state or counties. In all cases, they would be approved only if they are consistent with the protection of other values in the river corridor.

All public lands are open to recreational mineral collection unless specific minerals are subject to prior rights, such as mining claims.

In addition:

1. The John Day RMP would be amended by subjecting leasable minerals on public lands falling within the John Day River Canyon of the John Day Planning Area (Grant County)(Segments 5, 6, 7, 8, 9, 10, 11, and the Grant County portion of 4) (including designated SSWs and federally designated WSRs) to a no surface occupancy restriction (remaining portions of planning area already have this restriction under the Two Rivers RMP).
2. The BLM would adopt the SSW rules, as the minimum restrictions for locatable mineral operations on BLM managed lands in the river corridor. If state laws or rules in the future conflict with these requirements, an operator would be required to follow the federal requirements which are the SSW rules. If State laws or regulations require a higher standard of protection for public lands than these rules provide, the more stringent state requirements would apply. Where permitted, mining of locatable minerals would be subject to stipulations to protect river values. Stipulations would include actions necessary to:
  - Prevent sediment from entering the river or tributaries.
  - Protect riparian vegetation.
  - Prevent noxious weed establishment and spread.

Protect recreation facilities.

3. On BLM lands, new sites for the production of saleable minerals would not be permitted within SSWs or WSRs, and existing agreements would either not be renewed when they expire or would be renegotiated.

4. Facilities, such as established campgrounds, and launches would be closed to leasing and saleable minerals and withdrawn from locatable mineral entry under the 1872 Mining Law.

## **B. Monitoring**

Monitoring will be conducted in compliance with the IIT monitoring guidance.

## **C. Actions for Coverage**

**NMFS & USFWS:** The nature of this program prohibits any generalizations on types and extent of mining applications and standards. There is currently a very low level of mining activity within the Plan boundary. Any future proposed actions would require a plan of operations and would result in initiation of consultation. The BLM is therefore not looking for any coverage of this program, no determination will be made at the present time; however, individual actions will be consulted on as they are proposed.

## D. Summary of Effects and Effects Analysis

### Energy and Mineral Resources

	Direct Impacts	Indirect Impacts
Affects on Steelhead	ND	ND
Affects on Critical Habitat	ND	ND
Affects on Bull Trout	ND	ND

Existing management of Energy and Minerals Resources would maintain existing risk of erosion, surface runoff, and leaching of mining chemicals and heavy minerals into groundwater. Erosion and surface runoff would continue the introduction of sediment in the river which results in sediment filling cracks in the substrate and eliminating cover for small fish and macroinvertebrates upon which fish feed. Sediment would also continue to become embedded in spawning gravels which reduces the reproductive success of salmonids. Surface runoff from mining operations can introduce toxic chemicals or high concentrations heavy metals into the waterway and create water quality conditions that do not support aquatic life. The current low level of mining has little potential to affect water quality within the Wild and Scenic River Corridor and very little within the planning area.

Where “no surface” occupancy for leasable mineral resources would be implemented the probability of impacts on fish and fish habitat would be reduced. New stipulations for locatable mineral extraction would reduce the probability that sediment and chemicals would be introduced into the river.

The “no surface” occupancy stipulation for minerals extraction would apply in Segments 1, 2, 3, 8, 10, 11 and portions of segment 4, 7, and 9. The remaining segments - 4, 5, 6, 7, & 9 would remain under current management guidelines and dealt with on a case-by-case basis. For these areas the Mining Law of 1872 applies.



## **XII. Land Ownership Classifications and Use Authorizations**

### **A. Proposed Actions and Program Description**

The Two Rivers and John Day RMPs, as amended, provide direction for processing requests for utility and transportation rights-of-way and for land acquisitions, exchanges, and disposals. The RMPs identify certain corridors or river crossing “windows” where utilities may be placed to cross a given area. Several utility lines and pipelines already cross the John Day River in previously defined corridors. Any future requests granted would require the use of these corridors. BLM-designated corridors are generally 1000 feet on either side of existing road, pipeline, or major electric transmission right-of-way center lines.

Bureau of Land Management administered lands within the WSR are withdrawn from disposal (sale) under public land laws. These lands may be exchanged, however, for private lands of equal or greater value that are within the boundaries of the WSR.

*Lands Under Wilderness Review* - Until Congress acts on wilderness recommendations or otherwise releases WSAs for other purposes, these lands would be managed so as not to impair their suitability for preservation as wilderness, under the BLM Interim Management Policy for Lands Under Wilderness Review (IMP) (USDI-BLM 1995b). WSAs within the Prineville District are closed to mineral leasing, however, these lands have not been withdrawn from operation under the Public Land Laws. Permitted activities in WSAs (except grandfathered and valid existing rights) are temporary uses that create no new surface disturbance, nor involve permanent placement of structures. Those grazing, mining, and mineral leasing uses that existed on October 21, 1976 (the date FLPMA was approved) may continue in the same manner and degree as on that date, even if this would impair wilderness suitability. Valid existing rights must be recognized. All lands must be managed to prevent unnecessary or undue degradation. With few exceptions, such as mining patents, these lands may not be disposed of by public sale, exchange, patents under Recreation and Public Purposes Act, or state selections.

*Land Acquisitions* - Under this alternative, management decisions and land use allocations under existing RMPs would continue in effect. River values would be considered in these decisions and mitigation proposed where feasible.

The BLM has identified several parcels of land along the river for potential acquisition through purchase or exchange, or acquisition of easement. Primary benefits of acquisition would be to protect and enhance recreational, wildlife/fisheries, cultural and wilderness values. These lands, their location, the approximate size of the parcels and the values associated with the lands and/or the rationale for the proposed acquisition are fully described in the John Day River Proposed Management Plan FEIS 1999. Under most circumstances these lands would be acquired through an exchange process. Acquisitions would be limited to parcels with willing sellers and may occur only after site specific analysis tied to this EIS. Consultation would also be required on all future land exchange proposals.

### **Priorities for Acquisition**

Specific criteria exist for categorizing public land for retention, disposal, and acquisition. This list is not all-inclusive, but represents the major factors to be evaluated. The criteria to be used are public resource values, including but not limited to:

- Public access
- Threatened or endangered species habitat
- Reducing landowner conflicts
- Wilderness
- Riparian/wetland/unique habitats
- Manageability
- Recreation site potential/river campsites
- Cultural resources/National Register eligibility
- Paleontological resources
- Wildlife and fisheries
- Protection and enhancement of ORVs

*Lands Under Wilderness Review* - The Two Rivers RMP would be amended to change the land use authorization of new WSA lands to official WSA status. The public lands added in 1998 to North Pole Ridge WSA (Segment 2), and the lands within the Sutton Mountain and Pats Cabin WSAs (adjacent to Segment 3), would be studied under Section 202 of FLPMA to determine if they are best suited for wilderness designation or for some other non-wilderness use. These WSA lands would continue to be managed in compliance with IMP guidance until such time as Congress determines to either designate the areas as Wilderness or release them from further wilderness consideration. Approximately 2,400 acres of lands adjacent to Pats Cabin WSA would be inventoried for wilderness characteristics and managed as roadless area until the inventory process is complete.

## **B. Monitoring**

Monitoring of utility corridors and right-of-ways occurs concurrently with leasee when maintenance is required on those corridors. BLM personnel are present in areas of critical habitat when maintenance activities occurs, for example when PGE pipeline across river at Pine Hollow Canyon needs maintenance a BLM fisheries biologist is onsite to work with maintenance crews to protect habitats.

## **C. Actions for Coverage**

**NMFS & USFWS:** There are no specific proposals addressed in this plan. Impacts to resources will be discussed in future site specific proposals. Potential impacts could include increases in riparian areas associated with changed grazing management on acquired lands, or degradation or removal of riparian vegetation associated with increased human use via access and dispersed or developed recreation areas. Therefore the BLM is not seeking any coverage of this program and no determination will be made at this time.

## **D. Summary of Effects and Effects Analysis**

#### Land Ownership, Classifications and Use Authorizations

	Direct Impacts	Indirect Impacts
Affects on Steelhead	ND	ND
Affects on Critical Habitat	ND	ND
Affects on Bull Trout	ND	ND

Proposed acquisitions would provide the opportunity to improve management of riparian resources. At the same time, if these lands become more accessible to the public than at present, it is possible that the development of user trails, trampling of vegetation , and soil compaction would lead to additional runoff and subsequent erosion and sediment transport into the river and reduced infiltration into the soil. As a result, turbidity levels would increase and late season flow would decrease.

## Chapter 4

## Combined Effects

### I. Combined Effects of Actions Proposed

#### **Combined Effects of actions proposed in the John Day River Management Plan by the Prineville District BLM for population and Environmental Indicators for the Upper Main, North Fork, Middle Fork, South Fork and Lower John Day River Subbasins.**

**Water Temperature:** Actions proposed are aimed at the recover of riparian vegetation. These actions are not expected to produce a negative effect on water temperatures for steelhead or bull trout. Overall guidelines in place are designed to protect riparian vegetation which will maintain or improve water temperatures.

**Sediment/Turbidity:** Potentially a small amount of sediment could enter steelhead spawning/rearing stream reaches due to various actions proposed. Due to guidelines in place to protect vegetation, this amount of sediment should be insignificant and not degrade steelhead or bull trout habitat.

**Chemical Contamination/Turbidity:** Water chemistry should not be impacted by federal actions due to the fact that proposed actions are designed to protect and allow the recovery of water quality.

**Physical Barriers:** No BLM actions should be causing migration barriers for steelhead or bull trout.

**Substrate Embeddedness:** Potentially a small amount of fine sediment could enter the system due to proposed actions. These actions are designed to minimize/prevent fine sediment from entering streams.

**Large Wood:** Proposed actions are designed to minimize utilization on developing trees and shrubs, and should not affect the recruitment of large wood into stream habitats.

**Pool Frequency:** Proposed actions are designed to protect and improve streambank stability and riparian vegetation. Stable, vegetated streambanks and instream large wood are important factors in the development and maintenance of high quality pool habitats. Riparian vegetation is prevented from establishing in isolated areas due to road maintenance. These areas are scattered and minor and not expected to adversely affect the frequency of deep pools.

**Pool Quality:** Proposed actions are designed to protect and improve streambank stability and riparian vegetation. Stable, vegetated streambanks and instream large wood are important factors in the development and maintenance of high quality pool habitats. Riparian vegetation is prevented from establishing in isolated areas due to road maintenance. These areas are scattered and minor and not expected to adversely affect the frequency of deep pools.

**Off-Channel Habitat:** Proposed actions are designed to protect and improve streambank stability and riparian vegetation. Stable, vegetated streambanks and instream large wood are important factors in the development and maintenance of off-channel habitats.

**Refugia:** Proposed actions are designed to protect fisheries habitat and limit the disturbance to the population.

**Wetted Width/Max Depth Ratio:** Proposed actions are designed to protect and improve streambank stability and riparian vegetation. Stable, vegetated streambanks and instream large wood are important factors in maintaining appropriate channel widths for each respective stream channel type.

**Streambank Condition:** Proposed actions are designed to protect and improve streambank stability and riparian vegetation. Well vegetated streambanks and instream large wood are important factors in maintaining good streambank conditions. Temporary minor bank damage could result from various actions, but regrowth of vegetation protects against erosion during high flow events. Cumulatively this should not have a significant affect to steelhead habitat.

**Floodplain Connectivity:** All actions are designed to protect/enhance floodplain connectivity. No detrimental effects to steelhead or bull trout habitat are expected.

**Changes in Peak/Base Flow:** Actions are designed to recover these systems to their historic flow regimes or maintain current conditions.

**Drainage Network Increase:** The cumulative affects on the actions should not significantly change the drainage network..

**Road Density and Location:** Road densities will increase very slightly in the basin, but only on a temporary basis.

**Disturbance History:** Disturbance history will not be adversely affected by any of the actions.

**Riparian Reserves:** As described in the environmental baseline section, no assessment of riparian potential has occurred. However, all actions are design to minimize affects to the riparian areas.

Table 39. Showing the checklist for documenting combined effects for BLM actions on relevant indicators for the Upper Main, North Fork, Middle Fork, South Fork and Lower John Day River Subbasins

<b><u>PATHWAYS:</u></b> <b>INDICATORS</b>	<b>COMBINED EFFECTS OF THE ACTIONS</b>		
	<b>Restore</b>	<b>Maintain</b>	<b>Degrade</b>
<b><u>Water Quality:</u></b>		X+	
Temperature			
Sediment		X+	
Chem. Contam./Nut.		X+	
<b><u>Habitat Access:</u></b>		X+	
Physical Barriers			
<b><u>Habitat Elements:</u></b>		X+	
Substrate			
Large Woody Debris		X+	
Pool Frequency		X+	
Pool Quality		X+	
Off-Channel Habitat		X+	
Refugia		X+	
<b><u>Channel Cond. &amp; Dyn:</u></b>		X+	
Width/Depth Ratio			
Streambank Cond.		X+	
Floodplain Connectivity		X+	
<b><u>Flow/Hydrology:</u></b>		X+	
Peak/Base Flows			
Drainage Network Increase		X+	
<b><u>Watershed Conditions:</u></b>		X+	
Road Dens. & Loc.			
Disturbance History		X+	
Riparian Reserves	N/A		

\*\* In the maintain category X+ denotes effects which will maintain the indicator but which will have beneficial effects but not to the extent to restore the indicator, X- denotes effects which will maintain the indicator but which will have detrimental effects but not to the extent to degrade the indicator

### **Determinations of effects for the Cumulative Effects of BLM actions on the Upper Main, North Fork, Middle Fork, and Lower John Day River Subbasins**

BLM actions in these subbasins of the John Day River are comprised of various activities ranging from native hardwood outplanting to land exchanges. Many programs are too broad to consult on specific actions at this level and have been noted in the text. Other activities such as boat launch construction or expansion have been developed in some detail. Overall effects from proposed management within the John Day River Proposed Management Plan are rated as Not Likely to Adversely Affect primarily due to beneficial effects resulting from changes in management.

The Plan originally began as strictly a Wild and Scenic River Recreation Management Plan, but soon grew into a broader resource management plan focusing on anadromous fish habitat in a large extent. The plan has included efforts begun either before or after the plan that address anadromous habitat such as Salmon Summit and PACFISH which lay out specific guidelines for management direction. The Plan is a culmination of all these effort on the Prineville District Central Oregon Resource Area in one document. Management actions are directed at protecting and enhancing the outstandingly remarkable values for which the river was listed as Wild and Scenic, these values include anadromous and special status fish.

All actions proposed were designed with recovery of the listed fish present in the basin in mind so that actions were designed to either not affect the populations or to enhance the populations. Grazing strategies (although not specifically addressed in this document have been the focus of the Plan) have been designed to protect and enhance recovery of the riparian vegetation component along the river and associated tributaries. Recreation management actions are instituting the LAC (Limits of Acceptable Change) monitoring process to monitor changes in conditions with regard to recreation along the river and lead to management changes if necessary. Agricultural lands management are focused at phasing out commodity production and restoring native vegetation and then returning associated water rights to instream uses. Native hardwood outplanting is focused on restoring productive stands of cottonwoods and other native hardwoods in suitable areas throughout the basin. Cumulatively any disturbances associated with the proposed actions are minor, and should not impact steelhead trout populations to a magnitude that injury to listed fish or their habitat occurs.

## **Chapter 5            Essential Fish Habitat Assessment**

### **I. PROPOSED ACTION**

The proposed action is implementation of the John Day Wild and Scenic River Plan.

### **II. ESSENTIAL FISH HABITAT DESIGNATIONS**

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act and the 1996 Sustainable Fisheries Act, an Essential Fish Habitat (EFH) consultation is necessary for all actions that may adversely affect EFH (50 CFR 600.920). Essential fish habitat is defined by the Act in Section 3 (104-297) as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Pacific salmon EFH includes freshwater, marine, and estuarine environments. The majority of the Columbia River Basin is designated EFH for Pacific salmon, under the Pacific Coast Salmon Fishery Management Plan (FMP), approved by the Secretary of Commerce on September 27, 2000. Pacific salmon species covered in the FMP are coho salmon (*Oncorhynchus kisutch*), chinook salmon (*O. tshawytscha*), and pink salmon (*O. gorbuscha*). However, only chinook salmon EFH is affected by the proposed action. The FMP designates EFH for the Pacific salmon fishery as all those streams, lakes, ponds, wetlands, and other waterbodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except above certain impassable barriers identified by PFMC, or above longstanding naturally impassable barriers (i.e., natural waterfalls in existence for several hundred years). A detailed discussion of EFH for Pacific salmon is in Appendix A of Amendment 14 to the Pacific Coast Salmon Plan (PFMC, 1999).

### **III. EFFECTS OF THE ACTION**

The programmatic effects of the action on ESA-listed mid-Columbia River steelhead (MCRS) and its critical habitat are described in detail in preceding sections of this document. Effects to managed chinook salmon EFH should be equivalent or less to that of MCRS critical habitat because the two fish species have similar habitat requirements and chinook salmon are distributed in the same locations as MCRS. The proposed action affects all freshwater chinook salmon life stages (egg, larvae, juvenile, and migrating adults), particularly during spawning, incubation and rearing.

### **IV. DETERMINATION OF EFFECT**

Based on the findings in the BA analysis earlier in this document, the proposed action is not likely to have an adverse affect on designated EFH for chinook salmon in all river segments.



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# Appendix A



Maps 1 & 2 have been submitted previously with the Prineville District - Central Oregon Resource Area Grazing Biological Assessment. Please reference those maps for inclusion in this Appendix.

Map 1 is a depiction of the John Day River Basin and land ownership pattern. Map 2 is a depiction of the John Day River basin and tributary streams with steelhead habitat type highlighted.